RUSS OLSON VOLUME 3B

TRACK CONSTRUCTION:
ELECTRIC LINES

Description

Mpls. St. Ry. and St. Paul City Ry.

North Side Street Railway

Minneapolis Land & Investment Company

Minneapolis & St. Paul Suburban Railroad: Summary of track mileage and Construction costs

Overhead construction details

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- Track Mileage; Summary of Construction Details
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Minneapolis and St. Paul
Electrification of the
Horsecar Trackage

Office DEPOT.

The Minneapolis Electric Roads.

SRJ —— 1889

Work was begun on October 1 on the new electric road being built on the Fourth Avenue line in Minneapolis. This road will be equipped with the Thomson-Houston system by the Northwestern Electric Construction and Supply Co., of St. Paul, who control the patents of the Thomson-Houston Co. for the Northwest.

The cars will be equipped with the latest type of electric trucks, on which will be placed two 15 H. P. motors. These motors are flexibly suspended from the truck, and are geared by means of pinions composed of alternating layers of steel and rawhide to a split gear on the car axle, the reduction in speed from the armature shaft to the car axle being twelve to one. These cars, which are capable of being operated from either platform, may be run as fast as twenty miles per hour, and when running at maximum speed can be stopped in twice their length. There is power enough in each car to enable it to tow two additional cars at the rate of twelve miles per hour. The current to operate these cars will be furnished from generators to be placed in the new power house of the Northwestern Construction & Supply Co., in Minneapolis, in what is known as the old Pray building. These generators are capable of giving out a current equal to 80 H. P., and are perfectly automatic in their regulation.

It is expected to have the University Avenue line built before snow falls, and it will be in full operation before Christmas. This line differs from the Fourth Avenue line in regard to the poles which will be used. On the University Avenue line these poles instead of being placed on the sides of the street, will stand between the tracks, and the wires will be suspended on the ornamental brackets which will reach out from the track.

In running a line of this length (eleven miles) it is found more advantageous to break the line in the middle, and supply current to either section from two different power houses. The current for the Minneapolis end of the line will be furnished from Minneapolis, and the current for the St. Paul end from St. Paul. The speed of this road will approach very closely to twenty miles per hour, and it is expected that inside of a year it will go even higher than that, and possibly compete in time with the steam roads.

MPLS. TRIBUNE 12-22-1889

ALDERMEN ON THE MOTORS.

City Councilmen Are Pleased with the Operation of the Electric Line.

The electric motor cars on the Fourth avenue south line will begin running tomorrow, probably. The company has had its men employed in running the cars for some little time and the men are now well acquainted with their workings.

Three cars took the members of the city council out on a trip yesterday morning, leaving the postoffice at 11 o'clock and arriving at the Thirty-fourth street terminus in 16 minutes after the time of departure. With the bearings worn smooth the cars can travel at an increased rate of speed over their present performances. All of the aldermen were highly delighted with the new style of locomotion and have no doubts about its success if the obstacles of snow and ice can be overcome.

Minneapolis Tribune (1867-1908); Dec 24, 1889;
ProQuest Historical Newspapers Minneapolis Tribune (1867-192
pg. 5

ABOUT THE CITY.

The Fourth Avenue Electric Line in Complete Operation.

At exactly 4 o'clock yesterday afternoon eight new electric cars on the Fourth avenue line began to move from Second avenue on Third street on the first trips for the transportation of the public. The drivers and conductors, with long ulster coats buttoned about them with brass buttons, swelled out their breasts, looked straight ahead and felt even more dignified than the passengers aboard who looked out upon their friends standing upon the pavement. Ding, ding, ding, around the corner and straight out Fourth avenue they swept majestically while the hundreds of lookers-on pronounced them "just the thing," as they ran along as smoothly as is possible to be conceived. As the last one turned the corner and entered upon its long run, an astonished son of the Emerald isle thrust his hands deep into his pockets and exclaimed:

"Well yees can hang the loikes of me. I've heard of people talkin' through the tellmephone and writin' letters on the tellmegraph but ridin' on electricity is too much. They'll foind McGinty yet."

During the remainder of the afternoon and evening and up to a late hour last night the cars ran with but few interruptions. Each car carried fully as many people during the time they ran as a Fourth avenue horse car did during an entire day. Everybody pronounced it a grand improvement, especially in the matter of time. The electric cars made the round trip in 48 minutes, while the horse cars made it in 64 minutes. The run to Sixteenth street is made in 14 minutes, and the horse cars run it in 18. The intention is to put on the remaining two cars today, and from this out run on scheduled time.

1890

Minneapolis, Minn.

EDITORS STREET RAILWAY JOURNAL:—

The Minneapolis Street Railway Company, which controls every street railway line in the Flour City, has just made a decision that will be of the utmost interest to the street railway fraternity everywhere. This decision is to abandon work on the cable roads now under way and to equip every line in the city with the overhead electric system—either the Sprague or the Thomson-Houston.

Mr. Lowry has determined, provided the necessary permission can be secured from the city governments, to equip with electricity not only the Minneapolis lines but also the St. Paul roads, except the St. Anthony Hill road, which is operated by cable.

Of course, so important a decision was not reached hastily. Last Fall the Fourth Avenue line, in Minneapolis was equipped with electricity, to test this motive power. The first month's service convinced President Lowry and his colleagues that electricity was a practical success, even in the cold winters of the Northwest. An unusually heavy snow storm was encountered and yet the cars were handled with far greater ease than could have been done with horses. The mercury went down below zero on several occasions and still the electric motors continued to go about their business, doing their work with entire success. Moreover, the people of Minneapolis found the electric trains speedy and comparatively noiseless, and a largely increased patronage for the Fourth Avenue line was the result.

All this convinced the Minneapolis street railway men that electricity was the most desirable motive power for street roads. The company had already expended nearly $400,000 on power houses and material for two extensive cable lines—one on Washington Avenue and the other on First Avenue South. It was determined to stop work at once on the cables and to petition the Minneapolis City Council to have the company's franchises so altered as to permit the adoption of the electric system on all the lines in the city. A special meeting of the Council was called to consider the matter. The whole question was put into the hands of a committee for careful investigation.

On January 17 the Council, after some discussion, granted to the street railway company the right to use electricity on all its lines. The cable material already on hand is to be stored for use in case electricity does not give entire satisfaction, the electric franchise being conditional.

President Lowry, in stating his company's position, to a reporter for the Minneapolis Journal said: "We have found that so far as we can discover the people are thoroughly pleased with the electric line on Fourth Avenue. We have given it a fair test and we believe that electricity is the very best motor power we can put into our system. We have the interests of the public at heart in this matter. We stand ready to put in whatever system the public want, but we believe the electric system will fill the bill better than any other, and hence we are going to try that. I will confess to you that I have had to change my mind on this electric system. I did not believe that it would be successful when it was put in, but I have been convinced that it is best; I have changed my mind. I wish you would put it clearly to the public in the columns of the *Journal* that we are making this change because we believe it will be for the best and that the public will like it and will be benefited by it. If we thought the public would rather have the cable lines we would put them in. Then too, we decided that if we were going to do anything now was the time to do it. It would be better to go ahead now before any further expense is incurred than to lose any more money. We will sink a good deal of money in the work already begun, but it seems to be for the best. We propose to carry out the same transfer system so that when the whole system is completed a man may ride from one end of Minneapolis to the other over the electric lines without extra cost."

There are now in operation in Minneapolis a little over eighty miles of street railway. When all the proposed extensions are put in this will be increased to 110 miles. St. Paul has sixty-six miles of horse railway and 4.66 miles of cable. This will make a total electric road mileage of 176 miles in the Twin Cities.

President Lowry has received letters warmly indorsing the electric system from Tom L. Johnson, of the Cleveland electric lines, and from President Henry M. Whitney, of the West End Company, Boston.

W. E. BROWNLEE.

FIRST ELECTRIC LINES IN MINNEAPOLIS AND ST.PAUL

Compiled from Minneapolis Tribune Articles

Minneapolis

10-1-1889: Thomson-Houston Company will furnish the line complete and power, except for traction motors. MSR has ordered them.

10-3-1889: Power station will be in the old Pray building, 4th Ave. S. and 2nd St. S. Offices front, dynamos in old machine room of the main building, engines in the rear room.

10-11-1889: The poles are all set for the 4th Ave. S. electric line. Some changes will be made in the rails to adapt them to the new motive power.

St.Paul

10-14-1889: Northwestern Electric Construction Company [subsidiary of Thomson-Houston Electric Company] has received SPCR contracts to build:
1. From Smith Park, Sibley, 5th, Wabasha, W. 7th, Ramsey and Oakland [to Victoria].
2. Grand Ave. from VIctoria to the river, and connecting with the Oakland line.

MPLS. TRIBUNE 2-29-1890

TO OPEN TODAY.

The Grand Avenue Electric Motor Line to Be Opened.

The Grand avenue electric motor line will be formally opened today. Six or seven trains, each consisting of a motor and a trail car, will start from the corner of Smith avenue and Forbes street at 11 o'clock and move westward. Only invited guests and representatives of the press will be carried on these trains. Upon the arrival at the western terminus of the line a collation will be served and Archbishop Ireland, Mayor Smith, D. R. Noyes and E. E. Scribner will make addresses appropriate to the occasion. During the past two days the line has been in constant operation between Victoria streets, and the motor men have now become thoroughly instructed and skilled in handling the motor and manipulating the brakes. The Oakland avenue hill afforded them ample opportunity to work and study the various appliances. Yesterday afternoon the Victoria street turn table was taken out and electrical connection was made with the western part of the line. A train, carrying a small party including Archbishop Ireland, Thomas Cochrane, Col. Barr and Supt. Scott, was then run over the western portion of the line for the first time. The trip was entirely successful; the train running smoothly and at some points attaining a speed of 15 miles an hour. Although the line in some places was covered with snow and ice, the scrapers cleared the rails nicely, and a perfect ground connection was maintained throughout the run.

THE UNIVERSITY LINE

Minneapolis Tribune (1867-1908); Oct 13, 1889;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 5

THE UNIVERSITY LINE.

Why There Will Be No Work Done Until Next Spring.

For some days the public has known there would be no attempt to complete the electric line to St. Paul until next spring, but the exact reason for the abandonment of the operations has not been understood. F. C. Todd, of St. Paul, assistant manager of the Northwestern Construction Company, in charge of the railway department, in an interview with a TRIBUNE reporter yesterday, explains the matter in the following manner:

"The contract for the University line was closed some three weeks ago, at the same time the contracts were closed with the St. Paul City Railway Company, the Randolph street line and the Grand avenue line. The reason we discontinued work on the University line was that we felt we had undertaken more than we could carry out in the time we had, as we wanted to make sure of one or two lines to be running this winter. The other lines being so situated that we could rent the power to run them, they were chosen in preference to the University line, to run which we would have to build a new power station. The idea at first was to run the University line from power furnished by the gas company in St. Paul, but we found the feeders would cost in the vicinity of $20,000, and they did not have sufficient power to run the dynamos. The work on the University avenue line will be begun as soon as spring opens, and we shall commence to lay track on the Minneapolis end within a week."

Minneapolis, Minn. SRJ MAY 1890

A DELEGATION of citizens have opposed the street railway's petition for sixty days' extension of time for completing of the Douglas Avenue line, but, as a compromise are to have a line extended from Hennepin Avenue to Kenwood and Franklin Avenues by June 1.

ANOTHER extension is to be made; the Fourth Avenue line from Thirty-fourth to Thirty-eighth Streets, to be completed during 1891.

THE most important proposed extension is that of the electric line ordered on Riverside via Minnehaha Avenue to the Falls and the proposed abandonment of the motor line on Thirty-seventh Street, between Nicollet Avenue and the Falls, only when the Fourth Avenue and other lines extending to the suburbs can be completed.

CONTRACTS for material for the construction of the new electric lines were awarded March 29. They provide that the material is to be shipped to this city and St. Paul within thirty days, or a sufficient amount must be on the ground so that actual construction can be commenced. Three hundred and fifty thousand feet of lead covered wire cable for underground conduits, 170,000 ft. of insulated overhead copper wire were ordered from the John A. Roebling's Sons Co., of Trenton. N. J., and the necessary electric poles from the Walworth Manufacturing Co., of Boston.

WORK will be commenced on the Washington and First Avenue South lines as soon as circumstances will permit and pushed ahead as rapidly as possible. The work on the University line in St. Paul will be commenced at the same time.

AVERY® POLY VU

tion of State Street. The West Side horse cars now run on the west side of State Street, between Madison and Lake Streets, by right. The South Side cable (Mr. Holmes') occupies the east side of State Street, down to Madison, that being part of the north end loop of the State Street and Wabash Avenue cables. Mr. Yerkes obtained an ordinance from the City Council to change his horse car track, on that portion of State Street, into a cable line, to form part of the loop to bring his passengers from the West and Northwest portions of Chicago to the business centre of the city. The court upset that plan, and Mr. Yerkes has placed his loop on a shorter circuit.

The second remarkable event that recently came to pass is an injunction restraining Mr. Yerkes from building a tunnel under a building occupied by Warren Springer on Canal Street near Van Buren Street bridge. The remarkable points about that are that Mr. Yerkes is the owner of the building in question, and Mr. Springer holds it on a three years' lease only. At the end of the three years Mr. Yerkes will have full control of the building anyhow. The tunnel is for cables on Van Buren and other neighboring streets, and is to run under the new building on the west side of the river which is temporarily occupied by Mr. Springer, as stated. That an injunction should be issued in favor of a temporary tenant against the owner of the building (which is not likely to be damaged at all by the tunnel going under it) was quite unexpected, to say the least.

Anyhow, Mr. Yerkes pursues the even tenor of his ways, and these unexpected injunctions do not disturb him in the least. It makes but a slight difference whether the south side loop reaches State Street, or where it is now constructed. And the work on the Van Buren Street tunnel is going on, as far as it can be completed at present. The Washington Street tunnel, through which the Madison Street and Milwaukee Avenue cables are to run, is completed and ready for having the cable strung through it. The only thing lacking, apparently, is a "little hole," near the Madison Street power house, which is now being constructed, and the iron work and machinery for which are expected to arrive in a few days, in order to complete the whole of this new cable system.

This power house is located, as stated in the Street Railway Journal some time ago, at the junction of Madison Street and The Rockwell, the latter being the "thoroughfare" along which run the tracks of the Chicago and Northwestern Railway and the Pan Handle Belt Railway. There are four tracks in all, along which trains run continually. The Pan Handle people are going to build a depot on Madison Street, on the corner right opposite the power house, for which the ground has already been prepared. The inhabitants of the outskirts of the city will be brought by the Pan Handle belt line to this depot and thence transported by the Madison Street cable railway to the heart of the city.

Another great feeder to this cable line, will be the Cicero and Proviso electric railway, eight miles of which is also nearing completion, the electric power station being already finished. The electric road will join the Madison Street cable line at its terminus on Fortieth Street. This electric line is also to be in operation by the glorious Fourth—barring the unexpected. The Sprague system has been adopted.

There is a building along the west side of the Madison Street power house that deserves mention. It is an elevator, and a track is laid into it along which cars from the steam railroad tracks may be turned in. There is much more than enough room to provide feed for the whole street car horses of Chicago in it. And it is understood that machinery will be placed in this building to grind horse feed on an extensive scale. The facilities are such that ground feed may be shipped from here to Philadelphia, and sold there for less than they pay for the grain now.

While these vast schemes are developing, Mr. Yerkes is a member of the Board of Directors of the World's Fair, towards which the great street railroad magnate has contributed $1,500,000. The depth of his purse is unfathomable.

West Sider.

◆

Minneapolis Letter.

Street railway matters in the Twin Cities are progressing quietly but satisfactorily and the work of substituting electricity for "hay motors," as the much abused car horse is termed here, is advancing as rapidly as could be expected. Here in Minneapolis two lines will soon be in a state of transition. The street cars have been taken off Washington Avenue and are now running on Third Street one block away. Several hundred men are engaged in the work of preparing Washington Avenue for the electric line. The interurban lines between Minneapolis and St. Paul will run out Washington Avenue in this city, crossing the Mississippi over the Washington Avenue bridge. Not very much work is being done outside the city limits, on account of a lack of material, but the work will be advanced very rapidly when the facilities are at hand.

An extension is being built from the Fourth Avenue electric line to the motor station at Nicollet Avenue and Thirty-first Street. About July 1 the steam motors on the First Avenue line will cease running and the electric railway begin. The Fourth Avenue line will accommodate those who have been patronizing the motor trains. The motor line has been the source of a great deal of satisfaction among the patrons and the change to electricity will be heartily welcomed.

It is probable that the Washington Avenue and the First Avenue roads are the only lines that will be changed to electricity this year. The work is of such magnitude that it is impossible to change all the lines.

There is now only one line to the lake resorts, but the street railway company proposes to have three when all the electric lines are completed. One is projected out on the Hennepin Avenue boulevard. Some of the property owners have objected and the probable outcome cannot be stated. However, the facilities will be greatly increased. There is an immense travel to Lakes Calhoun and Harriet, which are only four miles from the City Hall, that is not now properly accommodated.

On the Washington Avenue line the poles will be set in the middle of the street. It was at first intended to have iron poles on all the lines, but the company seems to have recently altered its intentions in this respect. And a contract for a large number of wooden poles has been let to Brownlee & Co., of Detroit, Mich. They will be of uniform taper from the ground up, perfectly straight, octagonal in form and will be painted white. The iron arms extending on either side will be black, and the contrast will be pleasing to the eye.

In this connection it may be noted that Mr. John N. Brownlee, of Detroit, Mich., has just secured a patent on an invention that, it is believed by electricians who have investigated the drawings in advance, will make an important change in the method of operating electric cars. Mr. Brownlee's plan contemplates an underground conduit just below the surface. The objection to other underground systems has been that the slot would fill up with moisture, and the underground wire, being located directly beneath the slot and exposed to rain and water from the street, would have its current diverted into the ground. Mr. Brownlee's invention consists of a form of slot that covers the wires and at the same time insulates them from any moisture that may collect in the conduit.

In St. Paul the work is progressing with about the same rapidity as in Minneapolis. The old-time rivalry between the cities was funnily illustrated a few days ago, when some St. Paul citizens thought they had discovered that more men were being employed on the new lines in Minneapolis than in St. Paul. A committee was appointed to wait on Mr. Lowry and protest against Minneapolis being treated better than St. Paul. Mr. Lowry received his visitors cordially and proved that he had 450 men working in St. Paul against 350 in Minneapolis. In a short time, he said, when the materials were at hand, thousands of men would be put to work in both cities. The St. Paulists retired in good order, happy but somewhat crestfallen.

Two or three hundred men employed in the St. Paul construction struck a few days ago for higher pay. This demand was not granted and they have not yet returned to work.

The Grand Avenue electric line in St. Paul has been permanently reopened for travel. After the line was first opened objections were raised by owners of about fifty pieces of property along the line beyond Victoria Street, who wanted property rights adjusted. The line for two miles and a quarter was shut down, pending the differences. The citizens of Macalester Park appointed a committee to confer with these property owners, with a view of adjusting all differences. This committee represented all parties in interest without compensation, and went actively to work and saw all those whose property was affected. They found some of the people with a disposition to throw obstructions in the way of operating the line—some of them being non-residents of the state. From some the property was purchased outright; with others property was exchanged for that affected. With all an amicable adjustment was made.

The building of street railway cars is assuming larger proportions in Minneapolis. The Robinson & Moan company employ about 200 men and have about 150 cars in course of construction. Among them may be seen cars bearing the names of Akron, O.; Grand Rapids, Mich.; Oshkosh, Wis.; Elgin, Ill., and other cities of greater or less importance, while work will commence soon on contracts from Memphis and one or two other southern cities. The full capacity of the works has already been reached, and large additions will be made as soon as the buildings can be erected. These cars are being built for roads operated by electricity, by horses and by other kinds of power.

The failure of the Minneapolis Street Railway Co., to appreciate the importance of this plant, and to give this company an opportunity to bid on the new cars required for the Minneapolis street car system, was a very unfortunate circumstance, and tended at first to embarrass them not a little in obtaining outside work. The point was made, in soliciting work from other places, that this company ought to be manufacturing for Minneapolis and St. Paul, and that its failure to secure the home contract was an evidence of its inability to do good work. But they have overcome that obstacle. C. V. B.

Southern Notes.

NORFOLK, VA., June 16, 1890.

EDITORS STREET RAILWAY JOURNAL:—

An electric street railway is to belt the city of Albany, Ga.

Resolutions were recently adopted at a mass meeting of citizens in Richmond, Va., looking to the forfeiture of street railway franchises on account of inefficient service.

The total mileage of the Birmingham Railway & Electric Co., is sixty miles. Their company will issue $2,500,000 of bonds for the purpose of equipping their system with electric power.

The petition of the Union Passenger Railway Co. before the City Council of Baltimore, Md., has elicited considerable opposition from citizens who reside along the proposed route, who urge that "the system of electrical conductors proposed is highly objectionable." They say that it is liable to accidents, dangerous to life and that it is unfit for use except on broad avenues or suburban roads; that it causes an obstruction to the streets inconsistent with their free public use thereof and is an infringement on the rights of the public.

The City Council of Macon, Ga., have granted the right of way over certain streets to the Metropolitan Electric Railway Co. and work on the road has commenced.

A street railway company with a capital stock of $30,000 has been organized at Winchester, Ky. H. P. Thompson is president. The company will use electric motors.

The Crystal Spring Street Railway Co., with a capital stock of $15,000 has been organized at Roanoke, Va. the officers are: S. W. Jamison, president; E. H. Stewart, vice president; W. S. McClanahan, secretary and treasurer. The company is authorized to own 500 acres of real estate.

The City Council of Richmond, Va., has granted the South Side Land & Improvement Co. permission to use electricity on their Seventh Street railway.

The City Railway Co. of Richmond, Va., have petitioned the City Council that the time fixed, July 1, when the poles on Main Street shall be taken down unless all the cars are run by electricity, be extended to August 1. The request was granted under a provision that a guarantee be made to the effect that all cars shall be run by electricity at the time designated, accompanied by a bond of $5,000 for the faithful performance of same to be filed with the city treasurer.

The newly incorporated Home Electric Railway Co. of Macon, Ga., has chosen the following directors: A. C. Knapp, W. E. Jenkins, Peter Harris, W. A. Doody and D. J. Baer.

The City Council of Richmond, Va., has passed an ordinance allowing the South Side Land & Improvement Co. to run its cars over the Union Passenger Railway tracks from Seventh and Franklin to Seventh and Clay Streets and thence to the Richmond Locomotive Works. The arbitrators appointed for the purpose of ascertaining the amount to be paid for this privilege have made their award. The agreement, however, has not yet been signed by all the parties, and the details are not obtainable until that is done.

The Augusta Railway Co. of Augusta, Ga., which was incorporated by the Kansas City syndicate, has built a double electric line down the centre of Broad Street, out Gwinnett to the grounds of the Augusta Exposition. This is only a limited portion of their line, but is the part they will have in operation in time for the encampment of the state military. This company have had an injunction served upon them by the Augusta & Summerville Railroad Co. restraining them from crossing the tracks used for steam railroad purposes by the Augusta & Summerville road. It was thought that this sort of thing was over and the Kansas City company would have no further trouble, but the new owners of the Augusta & Summerville road seem bent on continuing the fight against the electric line. It is annoying and expensive and rather discouraging to capitalists who contemplate investing a million dollars in improving a city, to be met with injunctions and suits at every turn, but the Kansas City developers are old hands at the business and are not dismayed by such opposition.

A new electric street car is being tested at Roanoke, Va., and if the experiments are satisfactory a $500,000 stock company will be organized to purchase the patent, and operate the cars in different cities of the Union.

The City Council of Augusta, Ga., recently granted the Augusta & Summerville Railway Co. the privilege of using electricity on its lines. A portion of the line has been equipped with the electric cars and has already gone into operation.

The Elliott Farm Co. of Lynchburg, Va., intend building a street railway.

A street railway will be constructed at Americus, Ga., by the Americus Manufacturing & Improvement Co.

A $300,000 stock company has been formed at Greenville, S. C., to construct and operate an electrical railway and power plant.

An electric railway is to be built at Demorest, Ga., Frank J. Sibley, secretary of the Demorest Home Mining & Improvement Co. can give information.

A dummy line is to be built at Vienna, Ga., by the Vienna Improvement Co.

A company has been organized at Brunswick, Ga., to construct and operate a dummy line two and a half miles in length. R. R. Hopkins can give information.

A street railway is being built at Weatherford, Texas, and will have the most improved equipments.

E. A. O.

Minneapolis Tribune
Interurban Line

12-24-1890

It has been reported that the new 25 mile-per-hour motor cars, designed for use on the Interurban line were too large to go under the Milwaukee Railroad bridge. General Manager Goodrich was asked yesterday if this was so. Mr. Goodrich said that it was not. It was feared that the new motor cars might be too large, but a test has been made and it was found that the cars passed under the bridge withoug a scratch. Mr. Goodrich said in all probability the new motor cars would be put on in the course of 10 days. It is intended to make the run between the two cities in 45 minutes.

One car on the Minnehaha line, which is of the same size as those ordered for the Interurban line, has been passing back and forth under the Washington Ave. viaduct for several days without the slightest difficulty. A number of new cars for the St.Paul line were received yesterday from the LaClede works at St.Louis. Heavy poles are now being placed on the steel arch bridge.

5-25-1891

Interurban cars ran every 12 minutes yesterday. Twelve of the new 50 h.p. motor cars had been added to the number already on the line, and each of these hauled two trailers. With this ample accommodation none of the car were crowded, especially as the traffic between the two cities was very light.

For the first time the loop was used. It worked well. Cars coming up Washington Ave. turned down 1st Ave. S. to 1st St., thence to Hennepin Ave. and back to Washington Ave. where they were switched on to the right track for their return trip to St.Paul.

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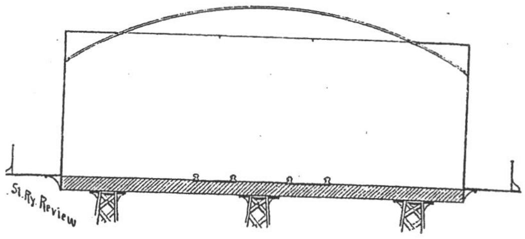
In cases where the horse is unable to stand, it will be needful to insure his safety as far as possible by having him laid in a roomy box stall, and taking precaution that in throwing himself about damage is not sustained. When thus prostrate, it is always advantageous to remove the urine every two or three hours by means of the catheter, by which also the bladder may be washed out with tepid water; it is necessary to assist the animal in attempts to drink every hour or two and obtain a change in position every three or four hours. Following the action of the cathartic and the discontinuance of the fever medicine, small doses of diuretic medicine may be given, such as one-half ounce of nitrate of potash once every day, in drinking water, alternated with some vegetable tonic, as tincture of gentian in half ounce doses three or four times daily. Should there be weakness and want of appetite after the purgative, it is good to allow a stimulant to be given, as alcohol or spirits nitre, in half ounce doses every three or four hours.

When unable to rise after the third day and the appetite is not entirely absent, it is advisable to attempt to raise the animal by appropriate means, such as slings. In the greater number of instances which are not of the worst type, and which do not terminate fatally in a short time, recovery or distinct symptoms of improvement are likely to follow the action of the purgative. During convalesence much care is always needed first to prevent overloading and disturbance of the digestive organs, and by the judicious use of medicine to restore tone and healthy action to the entire system. In conclusion it may be said that prevention is the proper treatment for this disease, by watching the condition of any animal that happens to be off duty, whether to rest or to be treated for some slight lameness, and if he is fat and strong *be sure* and have him gently exercised previous to going to work.

ST. PAUL AND MINNEAPOLIS INTER-URBAN LINE.

ONE of the most delightful electric car rides in the whole country is that to be had on the new Inter-Urban Line connecting St. Paul and Minneapolis. The distance from city to city is about ten miles, but since the opening of the line, residence building has progressed rapidly on both sides the handsome street, in the center of which the tracks are laid, with the trolley wires hung from the cross arms of center poles. These poles are placed between the tracks, leaving a safe distance between them and the body of the car, and as pole after pole stretches out along a hill top, down its side and away across a level stretch, the perspective is pleasing and the whole presents a most attractive picture. In both cities the line starts from business centers, and by an admirable system of transfers a passenger may take any car in one city and be transferred to the Inter-Urban Line. As a point half way between the two cities is approached, the conductor announces the fact and that beyond this point another fare will be collected.

The train crew then turn it over to another driver and other conductors, who set their registers back to zero and commence their run. No time is lost in making this change. Arriving in the other city a transfer is granted to other lines which carry one to any desirable locality. By this arrangement a resident of one city may take a car at his own door and ride to any part of the other for ten cents. Cars run on ten minute headway and the twelve miles is made in from 40 to 45 minutes. Trains consist of two cars each,—at present one open and one closed. Under the Minneapolis system all open cars are guarded with a woven wire guard which extends the entire length of the car on both sides, the passengers entering from the rear platform and reaching their seats through a center aisle. All cars are likewise gated on both front and rear platforms on the side next the other track. The traffic on the Inter Urban has been truly wonderful, the cars averaging 50 passengers each way during the entire day.



METHOD OF SUSPENDING TROLLEY WIRES ON VIADUCT.

Along the "Inter" portion of the line the track is laid with 60 pound Illinois Steel Company's iron; and in the "Urban" parts we find the Johnson Company's standard girder.

The line crosses the Mississippi in Minneapolis, on a high, steel arch bridge, over which the cars run at full speed, and the remainder of the trip is a charming variety of gently rising hills, from the top of which may be had fine views of the surrounding country for miles around.

The system of crossing steam railroad tracks is admirable, there being but one grade crossing and that an unimportant one. The steam tracks in Minneapolis are crossed by passing under them, and the large number of tracks which are met before reaching St. Paul, are passed by means of a magnificent viaduct over which the electric cars are run. To avoid using centre poles on this viaduct, which is quite a long one, the wires are sustained by 4 inch gas pipe joined as shown herewith, and springing from the dividing fence which separates the foot passageway from the road. The centre of this arch is fully 30 feet above the rails, and the whole is a very substantial construction. There are no severe grades on the Inter-Urban, but several long ones—however, the time made in climbing them is excellent, and there seemed no difficulty in securing full speed in going two or three car lengths after stopping for passengers at the steepest points. At night, as the gayly lighted train skims along, it is a most fascinating sight, especially late at night, when one misses by a moment the last car, and it sails away in the darkness and you are not in it.

MINNEAPOLIS ST. RY.

ELECTRIFIED TRACKAGE

ELECTRIFICATION OF THE HORSECAR SYSTEM

1889

The "4th Avenue South" line was selected for the experiment with electrically operated streetcars. Track involved extended from 1st Ave. S. and 3rd St. S., on 3rd St. to 4th Ave. S., and on 4th Ave. S. from 3rd St. to 34th St. E. MSR purchased the necessary engines and dynamos for generating electricity and let a contract with the Thomson-Houston Electric Company for conversion of the horsecar line to electric operation. Work began October 1, 1889, on removing the light horsecar tracks and replacing them with 70 lb/yd T rail spiked to wood crossties spaced at 24" intervals. Overhead construction consisted of wood poles placed on each side of the street with span wires between each set of poles supporting the trolley wire. At 4:00 p.m., December 24th, eight electric cars began operation over the line.

1890

On	From	To	Opened for Service
	Double Track built		
Lyndale Ave. S.	27th St. W.	28th St. W.	
28th St. W.	Lyndale Ave.	Hennepin Ave. S.	
Plymouth Ave. N.	Washington Ave. N.	Lyndale Ave. N.	
Riverside Ave. S.	24th Ave. S.	27th Ave. S.	
27th Ave. S.	Riverside Ave.	Minnehaha Ave. S.	
Minnehaha Ave. S.	27th Ave. S.	37th St. E.	
Central Ave. N.E.	25th Ave. N.E.	29th Ave. N.E.	
8th Ave. S.	35th St. E.	38th St. E.	
4th Ave. S.	34th St. E.	38th St. E.	
Washington Ave. S.E.	Cedar Ave.	University Ave. S.E.	
University Ave. S.E.	Washington Ave. S.E.	Emerald St. S.E. connection with new SPCR track.	
	Single Track built		
Douglas Ave.	Hennepin Ave. S.	Penn Ave. S.	
Penn Ave. S.	Douglas Ave.	21st St. W.	
Washington Ave. N.	32nd Ave. N.	42nd Ave. N.	
	Existing Track abandoned		
27th St. W.	Lyndale Ave. S.	Irving Ave. S.	
Dupont Ave. S.	27th St. W.	31st St. W.	
24th Ave. S.	Riverside Ave. S.	24th St. E.	
24th St. E.	Riverside Ave. S.	27th Ave. S.	
Franklin Ave. E.	4th Ave. S.	24th Ave. S.---Horsecars had stopped running on this track October 26, 1889.	
	Dates Electrified Lines Were Opened for Traffic		
Washington Ave. N.	Hennepin Ave.	42nd Ave. N.	September 10th.
Washington Ave. S., Cedar Ave. S., Riverside Ave. S., and 27th Ave. S. from downtown Minneapolis to 27th Ave. S. and 26th St.			September 21st.
1st Ave. S. and Nicollet Ave. S. from downtown Minneapolis to 38th St.			September 22nd.
Nicollet Ave. S.	38th St.	50th St.	October 5th.

On	From	To	Opened for Service
	Dates Electrified Lines Were Opened for Traffic		
Lyndale Ave. S.	Hennepin Ave. S.	28th St. and	
28th St.	Lyndale Ave. S.	Hennepin Ave. S.	November 28th.
8th Ave. S.	7th St. S.	38th St. E.	December 7th.
Douglas Ave.	Hennepin Ave.	Penn Ave. S. and	
Penn Ave. S.	Douglas Ave.	21st St.	December 9th.
"Interurban" line on Washington Ave. S.E. and University Ave. S.E. from Cedar Ave. to the city limits and through to St.Paul			December 9th.
Hawthorne Ave. N. from 12th St. and Hennepin Ave. to Lyndale Ave. N.			December 10th.

1891

On	From	To	Opened for Service
	Double Track built		
Plymouth Ave. N.	Lyndale Ave. N.	Penn Ave. N.	
2nd St. N.E.	17th Ave. N.E.	Lowry Ave. N.E.	
Lowry Ave. N.E.	2nd St. N.E.	Grand St. N.E.	
4th St. S.	1st Ave. S.	8th Ave. S.	
15th Ave. S.	8th St. S.	Franklin Ave. E.	
Cedar Ave. S.	Riverside Ave. S.	Franklin Ave. E.	
Lyndale Ave. S.	28th St. W.	31st St. W.	
Central Ave. N.E.	Monroe St. N.E.	18½ Ave. N.E.	
Broadway St. N.E.	Monroe St. N.E.	Washington St. N.E.	
Washington St. N.E.	Broadway St. N.E.	17th Ave. N.E.	
Hennepin Ave. S.	Lyndale Ave. S.	31st St. W.	
Minnehaha Ave. S.	37th St. E.	51st St. loop (Minnehaha Falls)	
Penn Ave. N.	20th Ave. N.	30th Ave. N.	
	Second Track added		
Washington Ave. N.	32nd Ave. N.	42nd Ave. N.	
	Single Track built		
Bryant Ave. S.	31st St. W.	38th St. W.	
	Existing Track abandoned		
7th Ave. S.	Washington Ave. S.	4th St. S.	
16th Ave. S.	8th St. S.	Franklin Ave. E.	
Franklin Ave. E.	16th Ave. S.	Cedar Ave. S.	
28th St. W.	Lyndale Ave. S.	Hennepin Ave. S.	
Monroe St.	Broadway St. N.E.	18½ Ave. N.E.	
18½ Ave. N.E.	Monroe St. N.E.	Central Ave. N.E.	
Oak St. S.E.	Washington Ave. S.E.	Delaware St. S.E.	
	Dates Electrified Lines Were Opened for Traffic		
Western Ave. N. from 7th St. N. and Hennepin Ave. to Penn Ave. N.			January 25th.
31st St. W. from Nicollet Ave. to the Harriet right-of-way and on the right-of-way to the Lake Harriet loop (at 42nd St.). (This was the "Motor Line" trackage.) A pavilion was built at Lake Harriet. The track from Lake Calhoun to Lake Harriet was illuminated at night by 40 powerful arc lights attached to the overhead poles at intervals as a scenic attraction.			May 24th.
4th St.	1st Ave. S.	8th Ave. S. and	
15th Ave. S.	8th St. S.	Franklin Ave. together	
with the Bloomington Ave. line trackage to		32nd St. E.	May 28th.

Dates Electrified Lines Were Opened for Traffic

On	From	To	Opened for Service
6th Ave. N.	Washington Ave. N.	Penn Ave. N.	June 14th.
From downtown Minneapolis on Hennepin Ave., Central Ave., and 4th St. S.E. to Oak St. S.E. and Washington Ave. S.E.			June 14th.
15th Ave. S.E.	4th St. S.E.	Como Ave.	June 14th.
From 27th Ave. S. and 26th St. E. to Minnehaha Ave. and on Minnehaha Ave. to Minnehaha Falls (51st. St.)		29	June 14th.
Central Ave. S.E./N.E.	4th St. S.E.	~~25~~th Ave. N.E.	June 28th.
2nd St. N.E.	Hennepin Ave. E.	Lowry Ave. N.E. and	
Lowry Ave. N.E.	2nd St. N.E.	Grand St. N.E.	August 4th.
20th Ave. N.	Washington Ave.N.	Crystal Lake Ave. and	
Crystal Lake Ave.	20th Ave. N.	Penn Ave. N. and	
Penn Ave. N.	20th Ave. N.	30th Ave. N.	August 13th.
Hennepin Ave. S.	Lyndale Ave. S.	31st St. W.	August 13th.
Lyndale Ave. S.	28th St. W.	31st St. W. and	
Bryant Ave. S.	31st St. W.	38th St. W.	December 16th.
Emerson Ave. N.	20th Ave. N.	32nd Ave. N.	December 17th.
Cedar Ave. S.	Riverside Ave. S.	34th St. E.	December 17th.
Monroe St. N.E.	Central Ave. N.E.	Broadway St. N.E. and	
Broadway St. N.E.	Monroe St. N.E.	Washington St. N.E.	
Washington St. N.E.	Broadway St. N.E.	17th Ave. N.E.	December 19th.
Plymouth Ave. N.	Washington Ave. N.	Penn Ave. N.	December 31st.

Track electrified during 1890-1891 in downtown Minneapolis included:
3rd St. S. from Hennepin Ave. S. to 4th Ave. S.;
4th St. S. from 1st Ave. S. to 8th Ave. S.;
8th Ave. S. from 4th St. S. to 7th St. S.; and
6th St. S. from Hennepin Ave. S. to 8th Ave. S.

St. PAUL CITY RAILWAY

ELECTRIFIED TRACKAGE

ELECTRIFICATION OF THE HORSECAR SYSTEM

One source reported that the "Rice St." line from downtown St.Paul (probably 7th and Wabasha Sts.) on Wabasha St. and Rice St. to Rice St. and Maryland Ave. was electrified and completed January 1,1890, but that the portion on Rice St. from University Ave. to Maryland Ave. was not used by electric cars until February 28, 1891.

The first electric line to actually operate in St.Paul was the "Grand Ave." line. Construction work was performed by the Northwest Thomson-Houston Co. The line ran from Smith Park in downtown St.Paul to Grand Ave. and Cretin Ave. New double track was built on Grand Ave. from Victoria St. to Cretin Ave. The route in downtown St.Paul was on 7th St. to Wabasha St., Wabasha St. to 5th St., 5th St. to Broadway, Broadway to 7th St., and return west on 7th St. to Wabasha St. New double track was built on 5th St. from Wacouta St. to Broadway, and on Broadway from 5th St. to 7th St. The line was opened for service February 22, 1890. The 1890 U.S. Census (July 1st) listed 11.18 miles of track for the line. Operation was from the Smith Ave. Carhouse. An early source reported that the eastern half of the line used side poles with span wires to support the overhead trolley wire while the western half used center poles with side brackets. The 1-1-1920 Valuation Report stated that the 1.46 miles on Grand Ave. from Snelling Ave. to Victoria St. was equipped with center poles and side brackets, replaced sometime during 1899-1908.

1890

The "Mississippi St." line was extended to Maryland Ave. and Arkwright St.; electrification of the entire line completed May 18th. Horsecar track abandoned on Acker St. from Mississippi St. to Cortland St. (1891?).

Track laid on E. 7th St. from Duluth Ave. to Hazel Ave., connecting with the North St.Paul Railroad at that point, completed June 10th.

West 7th St. from Ramsey St. to Tuscarora Ave. was electrified and completed October 24th.

University Ave. from Rice St. to Dale St. was electrified and completed November 2nd. The portion from Rice St. and University Ave. to downtown had been electrified earlier as described previously. New double track built on University Ave. from Dale St. to the Minneapolis city limits at Emerald St. S.E. connecting with the Minneapolis St. Ry. track to form the first inter-city line. Track (45 lb. T rail) from University Ave. west to the city limits was located on a 25 ft. wide sodded boulevard. All street crossings were planked. This track was also completed November 2nd but the first through operation did not take place until the MSR track was completed on December 9th.

The "West St.Paul" line was "reconstructed" from 7th St. and Wabasha St. on Wabasha St., Winifred St., Ohio St., George St. and Smith Ave. to Smith Ave. and Annapolis St. Horsecar track on Fairfield Ave. from Robert St. to Dakota Ave. abandoned. Completed December 31st.

New single track built on Robert St. from 5th St. to 8th St., and on 8th St. from Robert St. to Wabasha St.

1890 or 1891: new double track built on 5th St. from Wacouta St. to Broadway St., and on Broadway St. from 5th St. to 7th St.

1891

New double track built on Lexington Ave. from University Ave. to Minnehaha Ave., on Minnehaha Ave. to Snelling Ave., and on Snelling Ave. to Como Ave., completed January 13th. Double track extended on Como Ave. from Snelling Ave. to Langford Ave., completed July [redacted] 31st.

New track built on Concord St. from Cambridge St. to Witham St. The horsecar line on Robert St. from downtown and on Concord St. was electrified and connected to this new trackage, the entire line being completed January 14th.

The Payne Ave. line was electrified from downtown via Lafayette Ave., Minnehaha Ave., Payne Ave., York Ave., and Greenbrier St. to Greenbrier St. and Maryland Ave., completed February 13th. Horsecar track was abandoned (1890?) on Payne Ave. from York Ave. to Sims St., and on Sims St. from Payne Ave. to Greenbrier St. Replaced by newly constructed electrified double track on York Ave. from Payne Ave. to Greenbrier St., and on Greenbrier St. from York Ave. to Sims St. (Sims St. was one block north of York Ave.) Also at this time new track was built on 10th St. from Lafayette Ave. to Mississippi St. and the existing horsecar track on Locust St. from E. 7th St. to Lafayette Ave. was abandoned.

The previously (?) electrified track on Rice St. from University Ave. to Maryland Ave. was placed in operation February 28th.

New single track built on State St. and S. Robert St. from Concord St. to Annapolis St. completed February 28th.

New track built on Plum St. from Maria Ave. to Hastings Ave., and on Hastings Ave. to Earl St. The horsecar line on Maria Ave. was electrified and connected to this new trackage. Operation began February 28th, connecting with the cablecars at E. 7th St. and Maria Ave.

New double track built on Como Ave. from Rice St. to the intersection of Front St. and Dale St., completed February 28th.

The Rondo Ave. horsecar line was electrified from 10th St. and Wabasha St. to Rondo Ave. and Dale St., completed February 28th.

New track built on W. 7th St. from Tuscarora Ave. to the Mississippi River opposite Fort Snelling. Completed to Pleasant Ave., February 28th, and to the Fort Snelling bridge October 27th. This was all single track with three passing sidings.

New track built on Selby Ave. from Chatsworth St. to Fairview Ave., completed September 25th, as an electric extension of the Selby Avenue cable line. Additional new electric track was constructed on Fairview Ave. from Selby Ave. to Marshall Ave., on Marshall Ave. from Fairview Ave. to Prior Ave., and on Prior Ave. from Marshall Ave. to St. Anthony Ave., completed October 28th.

The "Mississippi St." line was extended to Brainerd Ave. and Edgerton St., completed during October. New track was built on Broadway St. from E. 7th St. to 10th and Mississippi Streets. Horsecar track on 13th St. and Somerset St. from Jackson St. to Mississippi St. was abandoned (1890?).

New track built on Randolph Ave. from W. 7th St. to Mississippi River Blvd., completed October 1st. (The A. L. Drum Valuation Report lists the segment from W. 7th St. to Snelling Ave. as completed during 1890 and the remainder from Snelling Ave. to River Drive during 1891.)

MINNEAPOLIS STREET RAILWAY EARLY ELECTRIC TRACK CONSTRUCTION
Compiled from Minneapolis Tribune Articles

10-24-1890: The new turntable opposite trhe American Express office is rapidly nearoing completion.

12-24-1890: When the "loop" [High St. Loop] is completed there will be no using of turntables.

3-15-1891: A number of big contracts have been let by the street railwaay company within the past week. About 20 miles of steel rails, 1,300 tons, have been contracted for with the Illinois Steel Works of Chicago, the delivery to begin as soon as the work opens. 1,000 center poles, such as are now in use in this city, will be furnished by Brownlee & Company of Detroit, Michigan.

6-29-1891: Mentions a turntable on 1st Ave. S. near Washington Ave.

8-30-1891: Interview with Thomas Lowry: he reported: Minneapolis 120 miles of electric track; St.Paul 75 miles of electric track plus 15 miles of cable track, 90 miles total.

6-12-1892: Miles of electric railway constructed: 1890 67 miles, 1891 50 miles, total 117 miles. This includes 8 1/2 miles which represents the Minneapolis portion of the Interurban line.

1895: Began using the Falk joint; some 2,000 laid. (Welded to ends of rails.)

4-11-1897: The concrete/asphalt track construction method cost $20,897.40 per mile of single track, or $3.96 per lineal foot.

9-20-1903: The first electric track switch was recently installed at 1st Ave. S. and 6th Street and is proving itself to be efficient. [Apparently in the eastbound track on 6th St.] The inventors and manufacturers are Louisville people. [Previously stationed a switchman at this site.[

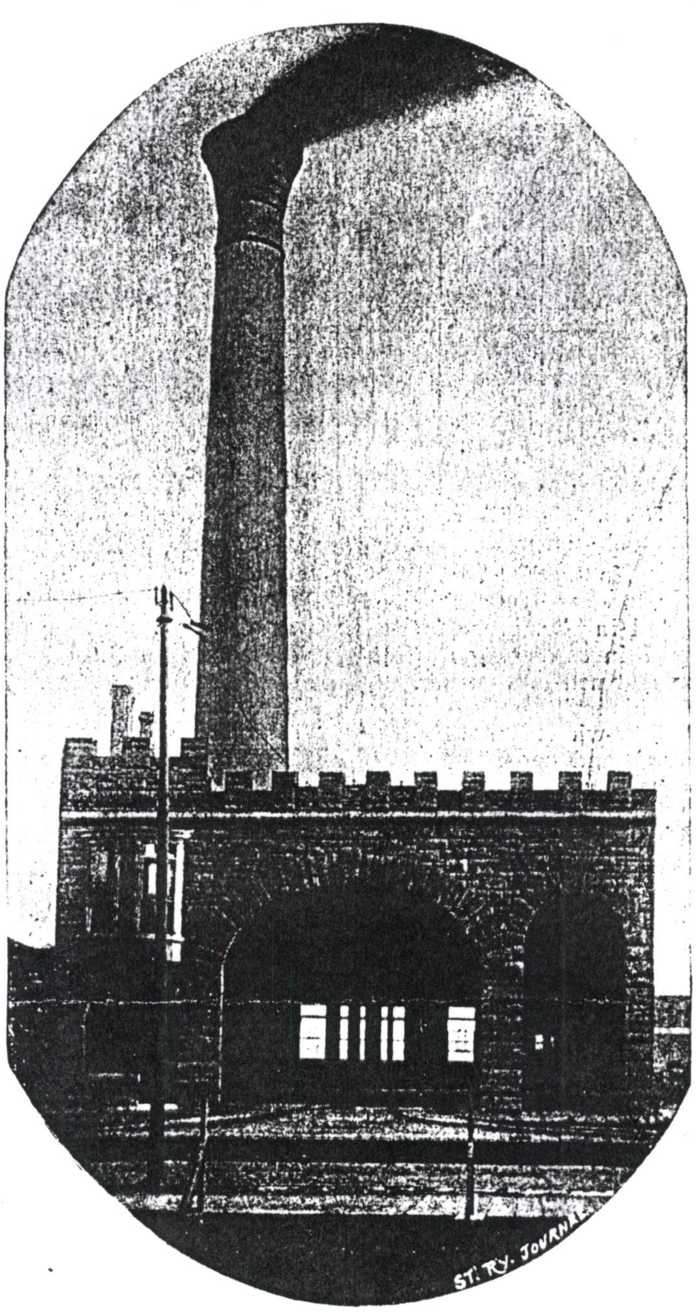
ment of the brushes ceases. At the same time the brushes are raised from the rails by means of the long levers shown in the view, and are movably connected to the brush shafts, about midway between the outer end of the brush and the universal joint. The brush shaft hanger has vertical adjustable bearings in which the brush shaft revolves, so that the brush can be raised from the track.

While this is arranged for using the car axle as a motive power, any form of motor can be used if preferred. The inventor is Mr. John Seror of Cohoes, N. Y.

Electric Railway at Duluth, Minn.

We present two views this month showing the power house and dynamo room of the Duluth Street Railway, Duluth, Minn. This road is about fifteen miles long, the greater part of which is double track. The work of changing from mules to electricity was commenced last Summer, the Thomson-Houston system being adopted. Originally the track was 3 ft. 6 gauge, but it has been changed to standard gauge, 4 ft. 8½. The old rail has been replaced by a girder rail set on chairs which are placed on ties three feet between centres, the ties being set on crushed rock and cement. This makes a very rigid roadbed for the operation of electric cars.

The city of Duluth, as is well known, is situated at the extreme west end of Lake Superior, on a hillside. The main line of the railway on Superior Street runs parallel with the hill, and a branch line on West Third Street runs up the hill on a grade of over eight per cent. for about four blocks. The electrical equipment decided upon for this service consists of twenty-eight 15 H. P. motors and ten 20 H. P. motors of the Thomson-Houston make. Twenty-four of these motors are mounted on twelve Hubbard trucks made by the McGuire Manufacturing Co., of Chicago, and an order has just been placed for the remainder of the motors to be mounted on seven Bemis trucks. The nineteen 16-ft. car bodies are supplied by the Laclede Car Co., of St. Louis, Mo.



POWER HOUSE, DULUTH STREET RAILWAY.

The power station is situated about the centre of the system, and, as will be seen from the illustration, is a very fine building for the purpose. It is erected on the side of a hill and built of brick with brown stone trimmings The engine room is on the second floor, below the street level, so that the windows do not show in the view of the exterior. The dynamo room is on the first floor and is very well illustrated in the interior view.

The steam equipment consists of one 375 H. P. Reynolds-Corliss compound condensing engine, which has been erected by the E. P. Allis Co. of Milwaukee. Three Houston generators, which are to supply the current for nineteen cars. Ample room is left in the station for doubling the plant, which in a growing city like Duluth, will soon be necessary. On the street floor of the power station, space is left to provide for a large number of cars, which will probably be added in a short time. The offices of the company are also on this floor, and for convenience of arrangement leave nothing to be desired. The car barn is at the east end of the line and is of the same general design as the power house, and in matters of convenience for cleaning, storing and repairing cars is excellent. The cross suspension overhead system is used, and the wires are supported from neat iron poles placed on either side of the street. Throughout the whole system, the results obtained show that the street railway company have adopted the wise course of allowing for a large increase in their business, and also that street railway buildings can be made so attractive as not to decrease the value of adjoining property. Twelve of the cars were put in operation November 21 and have been fully appreciated by the public.

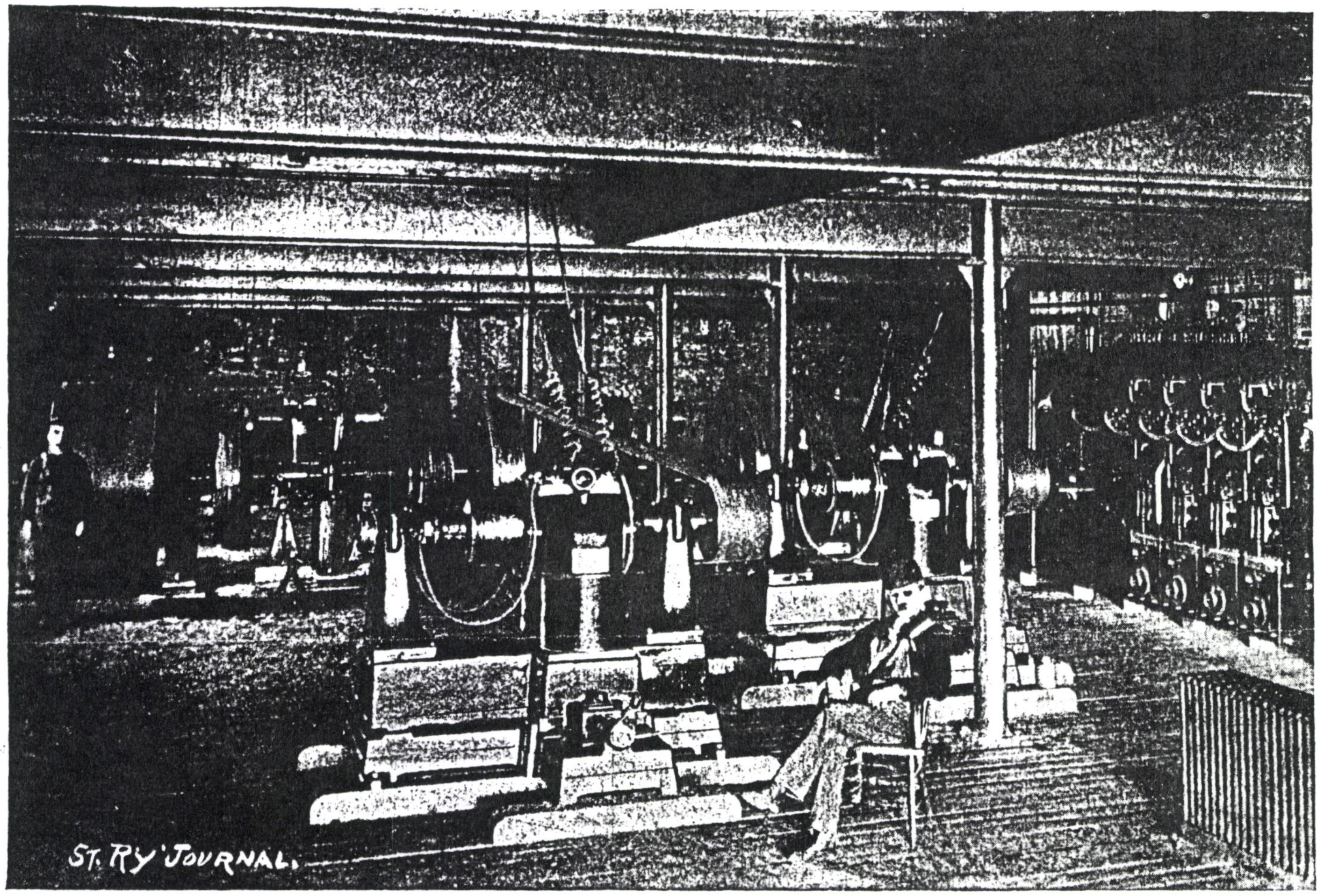
The Minneapolis Street Railway Co.

The Minneapolis street railway has been a very important factor in the progress and prosperity of this city. The magnitude of its operations and its interests are especially to be remarked at the present time, when, during eight months past, it has rebuilt eighty miles of track in changing the system from that of animal locomotion to electric power. During that time there has been expended over $1,500,000, a large part of which has gone to the working people of Minneapolis. It is thought that the great development of the street railway system, with its extension of rapid transportation to all parts of the city and its suburbs, will have a most important effect on the real estate and general interests of Minneapolis, making a decided epoch in its solid and substantial growth in wealth and population.

The street railway franchise is regarded by many as a "big bonanza." It is an excellent property, but its value has been overestimated and overstated. While some of the better patronized lines may be quite profitable, the more remote lines may be running considerably behind It certainly cannot be said of our street railway management that it has waited to establish new lines until such lines would pay. It has always complied cheerfully with the requests of the common council and co-operated with the wishes of citizens, running lines into sparsely settled districts far ahead of any possible prospects of remuneration for the expense involved, not only for months, but for years.

When street railway lines were first talked of in Minneapolis, during the early '70s, there was no one ready to take the risks of such a venture. When the charter was granted in 1875, with a fifty-year franchise, it was predicted and generally believed that no man then of middle age would live to see the time when there would be "any money in it." The franchise and the stock went begging, almost literally.

In the mean time, however, Thomas Lowry had come to Minneapolis from Illinois and begun the practice of law. Mr. Lowry was not exactly a capitalist at that time. He was a hopeful young man with a good humor and an enthusiasm which were irrepressible and irresistible. It is stated that he and a physician, whose practice now brings him in $20,000 a year, hired a room at four dollars a month and carried up their own wood and water. In these exercises they took turns.



DYNAMO ROOM, DULUTH STREET RAILWAY.

Mr. Lowry had built up quite a good law practice, and had, by dealing in real estate, secured some capital, when his attention was directed to the struggling street railway company, which, to use the words of one of our leading citizens, "never amounted to anything until Tom Lowry took hold of it and threw into it all his energy and a good lot of money and hard work." Mr. Lowry traded real estate for most of the stock and took charge of affairs in 1878. In 1880 about twenty-five miles of track had been built. A line ran from 4th Avenue N on Washington to Cedar Avenue, another by 4th Street SE to the University; one on 4th Avenue S to 15th Street; and one up Hennepin Avenue to 12th Street and across on 12th to Portland Avenue. The system has in ten years been developed and extended so as to now comprise 120 miles of track in all parts of the city, and extending to many distant suburbs.

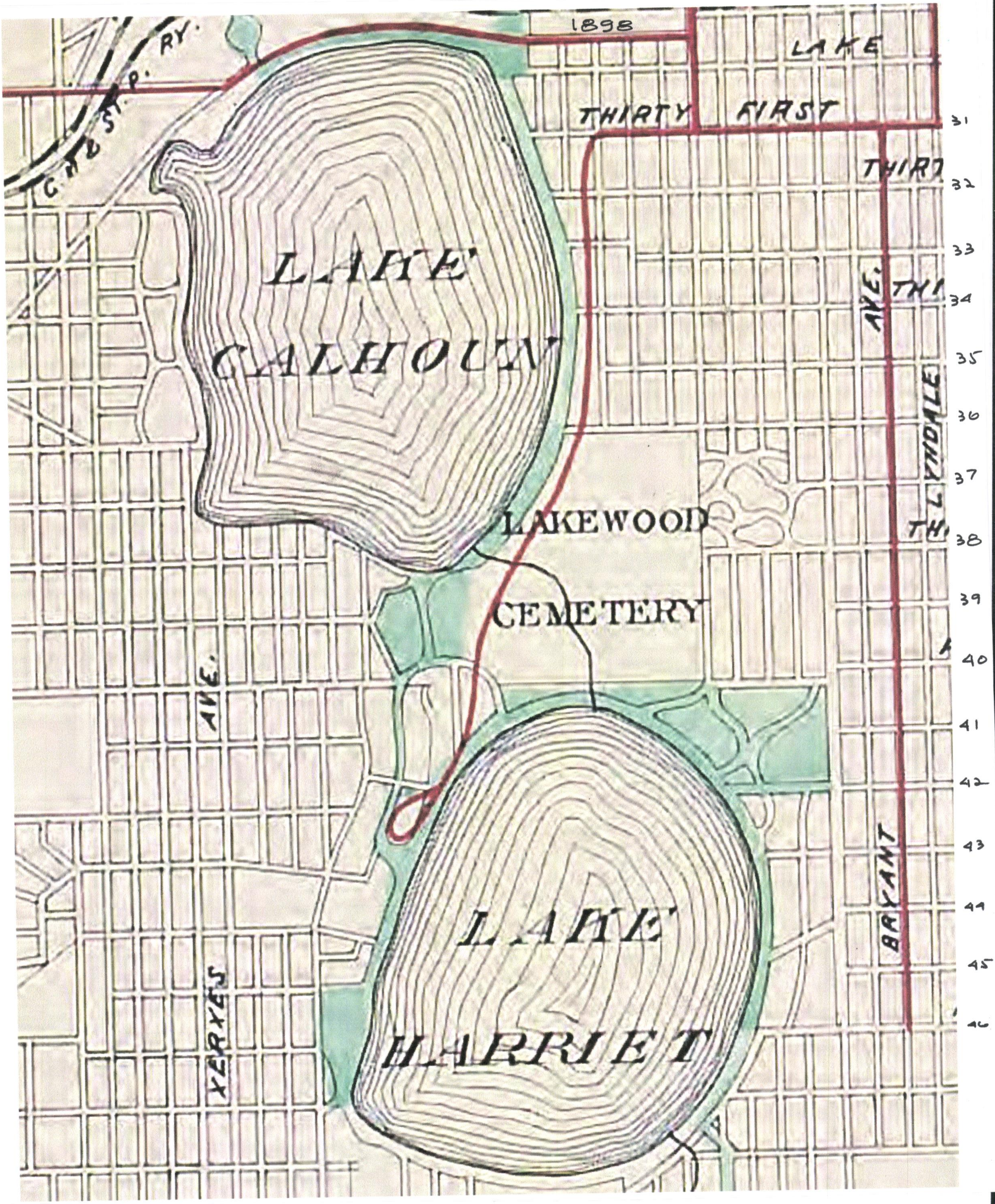
During this season some eighty miles of road have been entirely rebuilt. By the 4th of July, 1891, the company hopes to be able to celebrate its great industrial achievement of changing the entire bed, tracks and equip-

here in use. Centre poles are used to support trolley wires overhead, which carry the electrical current, as in other cities, but besides, there are laid many miles of conduits for feed wires to augment the electric force in the wires overhead, as desired. In other cities no conduits are used, and in this and other respects our street railway system is superior, being, in fact, the best in use, with the latest and best devices of all kinds known to electrical science at its present stage of progress.

The present equipment of cars is 450, with 120 motors, costing each from $3,500 to $4,000. With the system completed, 200 or more will be needed. Several large power houses have been built, where are located 3,000 H. P. engines and twelve dynamos of 200 H. P. each. Employment has been given this year to some 1,500 men, nearly all being employed who made application, at fair wages.

The officers of this company are: Thomas Lowry, president; C. D. Goodrich, vice-president and general manager; E. H. Center, secretary; M. B. Koon, treasurer, and D. W. Sharpe, superintendent. Mr. Goodrich has sole charge of operating and constructing this great street railway system, and its excellence is due very largely to Mr. Goodrich's ability. Joined with him is an excellent office and operating force, all united in securing the best results.

Mr. Lowry is a prominent shareholder and director in the "Soo" and in the Minneapolis & Pacific railways, and has served as their president. He is a genial, generous gentleman who aids every benevolent enterprise and does his full share and more to promote the general welfare of the community. Minneapolis has just cause to be proud of Thomas Lowry, and is certainly highly favored in so excellent a system of street railways as have been developed under his control.—*From the Minneapolis (Minn.) Journal.*


1898
C. M. & ST. P. RY.
LAKE
THIRTY FIRST
THIRT
AVE.
THI
LAKE CALHOUN
LAKEWOOD
CEMETERY
THI
AVE.
LYNDALE
XERXES
LAKE HARRIET
BRYANT
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AVERY® PV119

Some Important Dates in the Industry's History

1832—First American street car line, on the Bowery, New York City.

1833—Henry invented his "electric engine."

1835—Davenport made several motor car models, using batteries. Fundamental idea of motor for propulsion patented in 1837.

1838—Davidson exhibited electric locomotive with batteries at Aberdeen.

1840—Pinkus granted first patent for an electric railway.

1847—Lilley and Colton developed model locomotive using rails for conducting current from stationary battery.

1847—Farmer developed first electric locomotive in America at Dover, N. H.

1850—Hall exhibited an electric motor car at the Mechanics' Fair, Boston.

1851, April 29—Page operated battery car train between Washington and Bladensburg, 5 miles, at 19 m.p.h.

1859, May 10—Beers patented a 1½-in. rail to be laid on wooden stringers.

1861—Siemens invented dynamo.

1863—London Underground opened first subway in world, using steam.

1867—Pacinotti discovered the reversibility of the dynamo.

1868, June—Harvey tried cable drive locomotive on ½-mile elevated line in New York City, the first elevated in America.

1871, April 20—Steam dummy and three cars used on Ninth Avenue Elevated in New York City, the first commercial rapid transit line in America.

1873—Van Depoele exhibited a motor for tractive purposes.

1873, August—First street cable line put in operation in San Francisco.

1875—Green, of Kalamazoo, made first use of an overhead trolley.

1877—First girder rail rolled by Cambria Iron Company, at Johnstown, Pa.

1879—Siemens and Halske, at the Berlin Industrial Exhibition, propelled a miniature locomotive and three cars with power from a dynamo.

1880—Edison ran small locomotive at Menlo Park, N. J., using power from a dynamo and a third rail.

1881—Field ran a large motor car at Stockbridge, Mass., using a dynamo, a wire in a conduit and a rail return.

1881—Daft conducted early experiments.

1881 — Hopkinson proposed series-parallel control.

1881—Siemens and Halske started first commercial electric railway in world at Lichterfelde with two cars.

1882—Van Depoele installed system at Chicago, current conveyed by wire.

1882, Dec. 12—American Street Railway Association, now the American Electric Railway Association, organized at Boston.

1883—Edison, Field, Mailloux and Rea operated a 3-ton locomotive, "The Judge," with third rail at the Chicago Railway Exposition.

1883—Van Depoele ran car at Industrial Exposition in Chicago, using an overhead and over-running trolley wheel.

1883, November—Daft operated 2-ton locomotive, "Ampere," on 12-mile line of Saratoga & Mt. McGregor R.R.

1884, July 27—Bentley and Knight opened first commercial electric railway in America at Cleveland, using underground conduit system.

1884—Van Depoele operated train at Exposition in Toronto, using underground conduit.

1884, November—First issue of STREET RAILWAY JOURNAL appeared, the outgrowth of a street railway department in the *Journal of Railway Appliances.*

1885, August—Daft opened commercial line between Baltimore and Hampden, using a third rail with wheel for contact and later overhead.

1885—Henry built electric railway at Kansas City, with two overhead wires and over-running trolley wheels.

1885, Aug. 26—Daft locomotive, "Benjamin Franklin," on Ninth Avenue Elevated, New York City, marked first use of electricity on an elevated line.

1885, Oct. 21-23—First Convention Exhibit, at St. Louis, sponsored by STREET RAILWAY JOURNAL, twenty exhibitors.

1886, November—Montgomery, Ala., with Van Depoele system, was first city in world where street railways were run entirely by electricity.

1888, February—Sprague system at Richmond with 40 cars was largest installation to date and embodied advanced designs.

1888—First commercial freight locomotive built for service in Ansonia and Derby, Conn.

1890—Minneapolis - St. Paul line of 9 miles first permanent interurban.

1890—Westinghouse Electric & Manufacturing Company entered the electric railway field.

1892, April—General Electric Company formed as consolidation of Thomson-Houston, Edison General Electric, the Sprague and other companies.

1893—General Electric exhibited a 30-ton freight locomotive at the Chicago World's Fair.

1893, April 20—Elevated Intramural Railway at World's Fair, Chicago, opened, using motor cars and trailers.

1895—First heavy interurban line, from Cleveland to Akron, 25 miles.

1895—Synchronous converter first used in railway work, Lowell & Suburban Railway.

1895, May 17—First permanent all-electric elevated in America opened, the Metropolitan West Side in Chicago.

1895, June 30—New Haven started commercial service on its electrified Nantasket Beach line.

1895, Aug. 4—Baltimore & Ohio started regular freight operation through electrified tunnel in Baltimore, after a month or more of trial.

1897, March 23—Street Railway Accountants' Association of America organized at Cleveland.

1897, September—First subway in America opened at Boston, for surface cars.

1898—Multiple-unit control first used, South Side Elevated, Chicago.

1899—Siemens and Halske introduced first trolley bus in world at Berlin.

1899—First underground rapid transit line in America opened at Boston, using multiple-unit trains.

1901—First American trolley bus demonstrated by Eastern Trackless Trolley Company, of Boston.

1903, Feb. 16—American Railway Mechanical and Electrical Association, organized at Cleveland.

1904, April—Imperial Transit Company operated gasoline motor bus line in St. Louis.

1904, Oct. 12—Street Railway Claim Agents' Association of America organized at St. Louis.

1905—First electrified suburban service inaugurated by Long Island Railroad.

1905—Interpole railway motor introduced.

1905, August — Interurban bus line opened from Springfield to Jamestown, Ohio, 22 miles, by electric railway builders, three Oldsmobile buses.

1905, Sept. 27—Name of association changed to the American Street and Interurban Railway Association.

1905, October—Fifth Avenue Coach Company, New York, ran first gasoline-electric bus.

1906, April 27—American Street and Interurban Manufacturers Association organized.

1907, August—Fifth Avenue Coach Company placed fifteen gasoline buses in service, the first large motor bus line.

1908—New Haven Railroad electrified with single-phase, 11,000 volts.

1908, Jan. 30—American Street and Interurban Transportation Association, organized at New York City.

1908, June—STREET RAILWAY JOURNAL purchased *Electric Railway Review* and formed ELECTRIC RAILWAY JOURNAL.

1910, Sept. 11—First commercial trolley bus system in America started in Laurel Canyon, near Los Angeles.

1910, Oct. 10—Name of association changed to the American Electric Railway Association.

1914—Mercury arc rectifier tried for railway service by Pennsylvania R.R.

1914, July 1—First jitney appeared in Los Angeles.

1916, Nov. 1—Birney safety cars for one-man operation in Fort Worth.

Northside Street Railway

Minneapolis Land &
Investment Co.

NORTH SIDE STREET RAILWAY

ROBBINSDALE

Andrew Bonney Robbins
1845-1910

He moved to Minnesota in 1855 and resided in Anoka, employed by the St.Paul & Pacific Railroad. He married Adelaide J. Walker, a sister of Thomas Barlow Walker, in 1869. The family later moved to Willmar for the railroad. He became active in various Willmar businesses, particularly grain and grain elevators; founded the Bank of Willmar in 1879. He was elected a state senator at age 30. In 1882 the family moved to Merriam Park in St.Paul and he took over management of the Northwestern Elevator Company. In 1890 (1887?) he purchased a large tract of land (90 acres) north of Minneapolis which was subsequently platted as Robbinsdale Park. Also built a country home on 20 acres of grounds on the shore of Twin Lake.

North Side St. Ry.

The North Side Street Railway was incorporated in March, 1890, by Thomas B. Walker, John M. Moan, George P. Wilson, all of Minneapolis; Daniel M. Robbins and Andrew B. Robbins, both of St. Paul. In early 1891 a horsecar line was built "to the same gauge and with the same weight of rails as the Minneapolis St. Ry." The line opened June 1, 1891, as far as Johnson Road (36th Ave. N.). It was later extended via Hubbard Ave. to 42nd Ave. N. Turntables were located at (1) 32nd Ave. N. and Penn Ave. N., and (2) 42nd Ave. N. and Hubbard Ave.

Other sources report that an all single track line was completed during July, 1891, on 32nd Ave.N. (Lowry Ave.N.) from the Minneapolis city limits to Oak Lake Ave., thence on Oak Lake Ave. and private-right-of-way to Hubbard Ave., and on Hubbard Ave. to 42nd Ave. N. That portion of track on 32nd Ave.N. from the city limits east to Penn Ave. N. was located within the city limits of Mineapolis and had to be constructed by the Minneapolis St. Ry. However MSR had been delaying the start of construction and was ordered in July by the Minneapolis city council to start at once. MSR records give no indication as to when this connecting track was completed. The MSR line that was to connect with the North Side St. Ry. track was built in two stages: (1) Penn Ave. N. from 20th Ave. N. (Broadway) to 30th Ave. N., completed August 13, 1891; and (2) Penn Ave. N. from 30th Ave. N. to 32nd Ave. N., completed during 1892. Minnesota Railroad & Warehouse Commission records list the entire line as completed in 1892.

Offices of the company were located at 324 Kasota Building, Minneapolis.

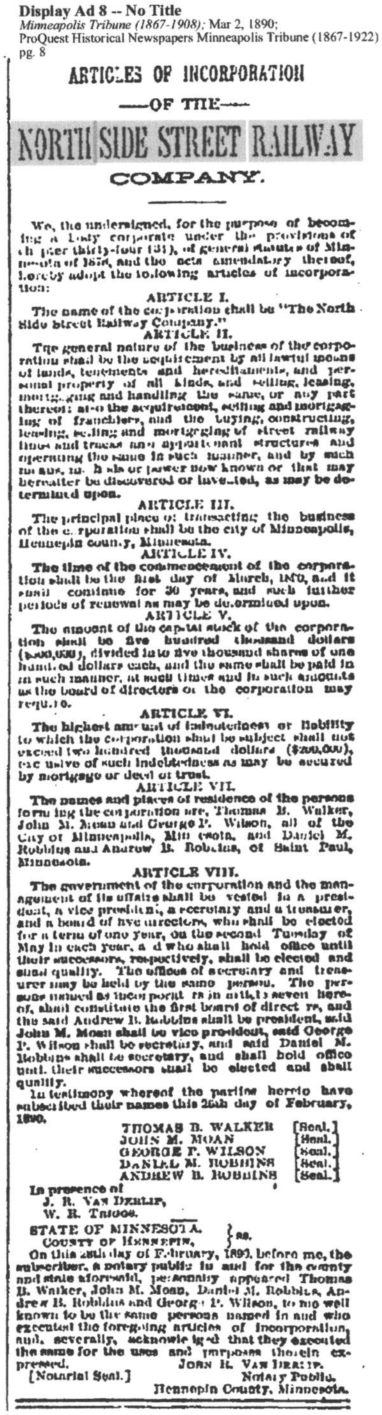
An elderly former resident claimed to remember seeing a "soda motor" with one small closed trailer (both painted red) operating on the line. A local history of Robbinsdale printed in 1983 stated both that (1) a "gasoline motor" had replaced the horsecars; (2) there was a "separate engine with a trailer car for passengers". Apparently this refers to the use of a former Minneapolis, Lyndale & Minnetonka Ry. steam motor and passenger trailer. (SRJ 3-1897 steam motor)

Apparently the carhouse facilities were located at 42nd Ave.N. and Hubbard Ave.N. On January 14, 1897, the carhouse and equipment were destroyed by fire. At an election held February 13, 1897, voters "approved an electric line by unanimous vote". A February 18, 1897, issue of a trade periodical explained that North Side St. Ry. had asked the city to vote aid to the amount of $2,000 to assist in electrifying the line. "New" cars (meaning electric streetcars leased from MSR) began running April 18, 1897. (A photograph showed a single-truck, double-end, Stephenson-built car with the Old Style trolley base.) A survey of the property dated November 20, 1897, reported that track consisted of 35 lb. T rail in fair condition but poor in surface; side overhead poles with round trolley wire were used.

TCRT construction journals for the year 1904 list that in April expenditures were made to place a vestibule on one Jones car sold to A. B. Robbins.

An article in the local newspaper for June 3,1906, reported that North Side St. Ry. had purchased four large double-truck cars from TCRT to replace the two cars currently in use that were to be retired. The TCRT construction journals indicate that four cars, 732-735, were sold to the North Side St. Ry. in May for $1,250 each. However this entry was reversed in October, 1906.

Instead the decision was made for TCRT's wholly-owned subsidiary, the Minneapolis & St.Paul Suburban Railway to acquire the property. The transaction was completed November 5, 1906, for a payment of $30,000. At this time there apparently was no physical track connection between NSSR and MSR. After the acquisition the NSSR carhouse and cars had to be used until the track connection could be made. The construction journals report that one switch was installed during 1907 at 32nd Ave. N. and Penn Ave. N.



Display Ad 8 -- No Title
Minneapolis Tribune (1867-1908); Mar 2, 1890;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 8

ARTICLES OF INCORPORATION
—OF THE—
NORTH SIDE STREET RAILWAY
COMPANY.

We, the undersigned, for the purpose of becoming a body corporate under the provisions of chapter thirty-four (34), of general statutes of Minnesota of 1878, and the acts amendatory thereof, hereby adopt the following articles of incorporation:

ARTICLE I.

The name of the corporation shall be "The North Side Street Railway Company."

ARTICLE II.

The general nature of the business of the corporation shall be the acquirement by all lawful means of lands, tenements and hereditaments, and personal property of all kinds, and selling, leasing, mortgaging and handling the same, or any part thereof; also the acquirement, selling and mortgaging of franchises, and the buying, constructing, leasing, selling and mortgaging of street railway lines and tracks and appurtenant structures and operating the same in such manner, and by such means, methods or power now known or that may hereafter be discovered or invented, as may be determined upon.

ARTICLE III.

The principal place of transacting the business of the corporation shall be the city of Minneapolis, Hennepin county, Minnesota.

ARTICLE IV.

The time of the commencement of the corporation shall be the first day of March, 1890, and it shall continue for 30 years, and such further periods of renewal as may be determined upon.

ARTICLE V.

The amount of the capital stock of the corporation shall be five hundred thousand dollars ($500,000), divided into five thousand shares of one hundred dollars each, and the same shall be paid in in such manner, at such times and in such amounts as the board of directors of the corporation may require.

ARTICLE VI.

The highest amount of indebtedness or liability to which the corporation shall be subject shall not exceed two hundred thousand dollars ($200,000), exclusive of such indebtedness as may be secured by mortgage or deed of trust.

ARTICLE VII.

The names and places of residence of the persons forming the corporation are, Thomas B. Walker, John M. Moan and George P. Wilson, all of the City of Minneapolis, Minnesota, and Daniel M. Robbins and Andrew B. Robbins, of Saint Paul, Minnesota.

ARTICLE VIII.

The government of the corporation and the management of its affairs shall be vested in a president, a vice president, a secretary and a treasurer, and a board of five directors, who shall be elected for a term of one year, on the second Tuesday of May in each year, and who shall hold office until their successors, respectively, shall be elected and shall qualify. The offices of secretary and treasurer may be held by the same person. The persons named as incorporators in article seven hereof, shall constitute the first board of directors, and the said Andrew B. Robbins shall be president, said John M. Moan shall be vice president, said George P. Wilson shall be secretary, and said Daniel M. Robbins shall be secretary, and shall hold office until their successors shall be elected and shall qualify.

In testimony whereof the parties hereto have subscribed their names this 26th day of February, 1890.

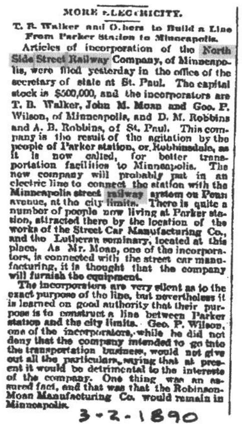
THOMAS B. WALKER [Seal.]
JOHN M. MOAN [Seal.]
GEORGE P. WILSON [Seal.]
DANIEL M. ROBBINS [Seal.]
ANDREW B. ROBBINS [Seal.]

In presence of
J. R. VAN DERLIP,
W. R. TRIGGS.

STATE OF MINNESOTA, } ss.
COUNTY OF HENNEPIN,

On this 26th day of February, 1890, before me, the subscriber, a notary public in and for the county and state aforesaid, personally appeared Thomas B. Walker, John M. Moan, Daniel M. Robbins, Andrew B. Robbins and George P. Wilson, to me well known to be the same persons named in and who executed the foregoing articles of incorporation, and, severally, acknowledged that they executed the same for the uses and purposes therein expressed.

JOHN R. VAN DERLIP.
[Notarial Seal.] Notary Public,
Hennepin County, Minnesota.



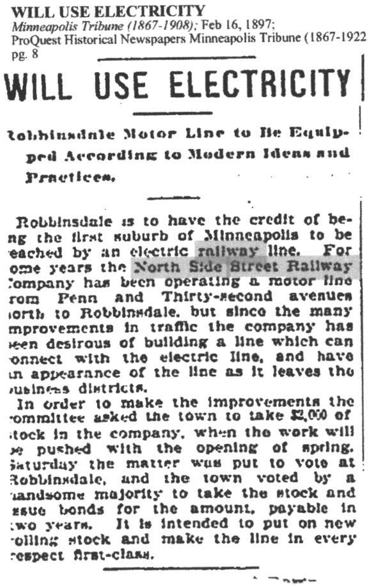
MORE ELECTRICITY.

T. B. Walker and Others to Build a Line From Parker Station to Minneapolis.

Articles of incorporation of the North Side Street Railway Company, of Minneapolis, were filed yesterday in the office of the secretary of state at St. Paul. The capital stock is $500,000, and the incorporators are T. B. Walker, John M. Moan and Geo. P. Wilson, of Minneapolis, and D. M. Robbins and A. B. Robbins, of St. Paul. This company is the result of the agitation by the people of Parker station, or Robbinsdale, as it is now called, for better transportation facilities to Minneapolis. The new company will probably put in an electric line to connect the station with the Minneapolis street railway system on Penn avenue, at the city limits. There is quite a number of people now living at Parker station, attracted there by the location of the works of the Street Car Manufacturing Co., and the Lutheran seminary, located at this place. As Mr. Moan, one of the incorporators, is connected with the street car manufacturing, it is thought that the company will furnish the equipment.

The incorporators are very silent as to the exact purpose of the line, but nevertheless it is learned on good authority that their purpose is to construct a line between Parker station and the city limits. Geo. P. Wilson, one of the incorporators, while he did not deny that the company intended to go into the transportation business, would not give out all the particulars, saying that at present it would be detrimental to the interests of the company. One thing was an assured fact, and that was that the Robinson-Moan Manufacturing Co. would remain in Minneapolis.

3-2-1890



WILL USE ELECTRICITY
Minneapolis Tribune (1867-1908); Feb 16, 1897;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922
pg. 8

WILL USE ELECTRICITY

Robbinsdale Motor Line to Be Equipped According to Modern Ideas and Practices.

Robbinsdale is to have the credit of be-
ng the first suburb of Minneapolis to be
eached by an electric railway line. For
ome years the North Side Street Railway
Company has been operating a motor line
rom Penn and Thirty-second avenues
orth to Robbinsdale, but since the many
mprovements in traffic the company has
een desirous of building a line which can
onnect with the electric line, and have
n appearance of the line as it leaves the
usiness districts.
In order to make the improvements the
ommittee asked the town to take $2,000 of
tock in the company, when the work will
e pushed with the opening of spring.
Saturday the matter was put to vote at
Robbinsdale, and the town voted by a
andsome majority to take the stock and
ssue bonds for the amount, payable in
wo years. It is intended to put on new
olling stock and make the line in every
espect first-class.

St Ry Review
2-15-1897

Fire at Robbinsdale, January 14, destroyed two gasoline motor cars and car shed owned by A. B. Robbins. New gasoline motors will be secured at once. Loss $4,000 partly insured.

North Side Street Railway Co.—Chartered Feb. 28, 1890, for 30 years. Municipal franchise granted March 11, 1890, in perpetuity. The line extends to Robbinsdale.

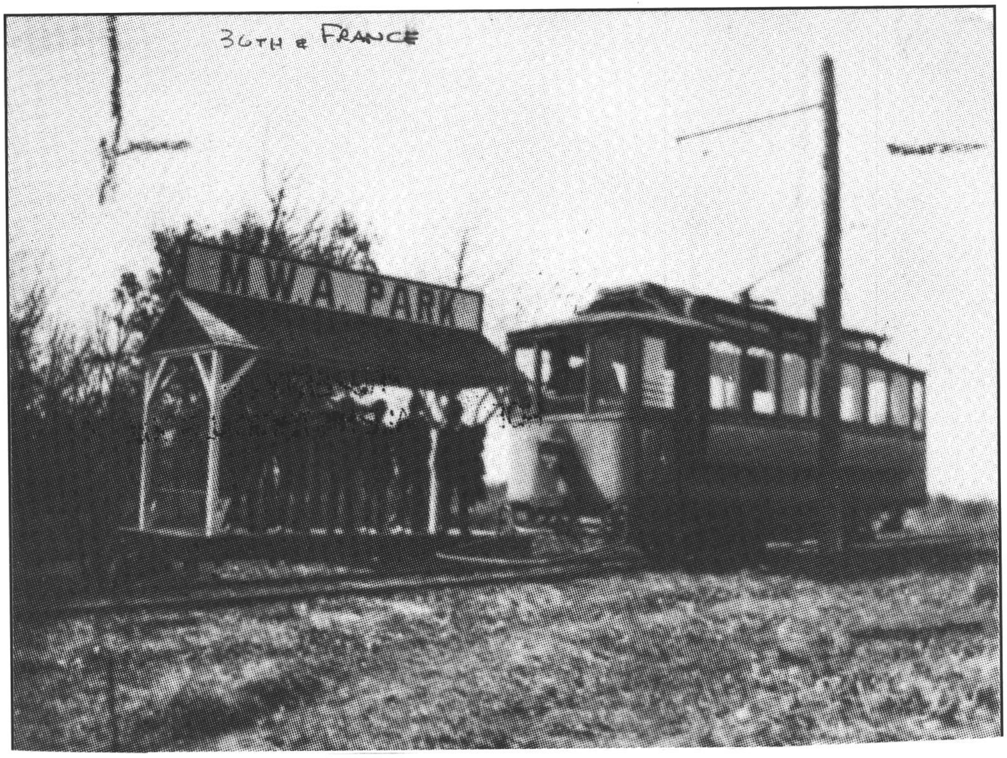
CAPITAL STOCK, authorized, $500,000, issued, $13,000; par value, $100 per share.

PLANT AND EQUIPMENT.—Miles of track 2.5; 3 cars; rents power from Twin City Rapid Transit Co.

OFFICERS.—Pres. & Treas. A. B. Robbins; V. Pres. A. L. Sortor, Jr.; Sec. A. L. Jones; Elec. Engr. J. S. Small, all of Minneapolis.

GENERAL OFFICE, 324 Kasota Block, Minneapolis, Minn.

Date of information, Mar., 1906. z



36TH & FRANCE

MINNEAPOLIS LAND & INVESTMENT CO.

ST. LOUIS PARK

This company was incorporated in September, 1890, by Thomas B. Walker, C. G. Goodrich, L. F. Menage, H. F. Brown, Thomas Lowry, R. C. Haywood, Charles A. Pillsbury, George H. Christian, G.G. Boshart and A. M Allen. The purpose was to develop land for the attraction of industry to the St. Louis Park area. As a result several firms built plants there: Monitor Manufacturing Co., Jarless Spring Carriage Co., Thompson Wagon Co., and Minneapolis Esterly Harvester Co. To provide transportation for the workers a streetcar line was to be constructed. A franchise was received from St. Louis Park on February 6, 1891, which provided, among other things, for a 5 cent fare, free transfers to Minneapolis St. Ry., no freight hauling, electric operation only with power to be purchased from Minneapolis St. Ry., and 25 m.p.h. speed limit.

Construction began in May, 1892, on a single track line from 29th St. (now Lagoon Ave.) and Hennepin Ave., on 29th St. and W. Lake St. around Lake Calhoun adjacent to the Hastings & Dakota Railroad tracks, directly west on Lake St. about one mile, crossing the railroad tracks, and then southwesterly on Lake St. past the Esterly Harvester Works to the end at W. Lake St. and Broadway. Minneapolis St. Ry. built the line, furnishing much of the material.

Hennepin & Washington to 29th & Hennepin	2.88 miles
29th & Hennepin to the railroad crossing	1.14 miles
Railroad crossing to St.Louis Park	2.01 miles
Total line length	6.03 miles

MSR began operations December 21, 1892, with two 18 ft. single-truck closed motor cars, each with a motorman and conductor. Power was furnished by MSR's powerhouse at 31st St. and Nicollet Ave. The bridge over the railroad tracks (Minneapolis & St.Louis Ry.; Chicago, Milwaukee & St.Paul Ry.) was unfinished so one car operated from Hennepin and Washington Avenues to the bridge site, and the other car from the opposite side of the bridge site to the business center of St.Louis Park. Hourly service was provided from 6:00 a.m. to 8:00 p.m. (15 daily round trips). The two cars made connections at the railroad crossing until the bridge was completed.

MSR invoiced the M.L.&I. Co. July 31, 1893, for labor furnished during July "unloading two St.Louis Park cars." MSR furnished labor and materials during July and August for the two new cars. The August, 1893, issue of a local trade publication that "the Minneapolis St. Ry. (sic) was further improved by the addition of handsome new vestibuled cars for the St. Louis Park line". These cars were 45 ft. long, built by the St.Louis Car Co. of St.Louis, Missouri, placed in operation when the bridge over the railroad tracks was completed. A reference says that three cars were needed to provide twenty minute headway, but photographs survive of only two cars, numbers 1 and 2. A newspaper article dated in November, 1906, mentioned "the rickety #1 and #2 cars". So far we have found no evidence of a third M.L.&I. Co.-owned car.

TWO CARS PURCHASED AT A COST OF $5,500 EACH.

New operating rules with MSR went into effect August 30, 1893, when M.L.&I. Co. began operating its line.

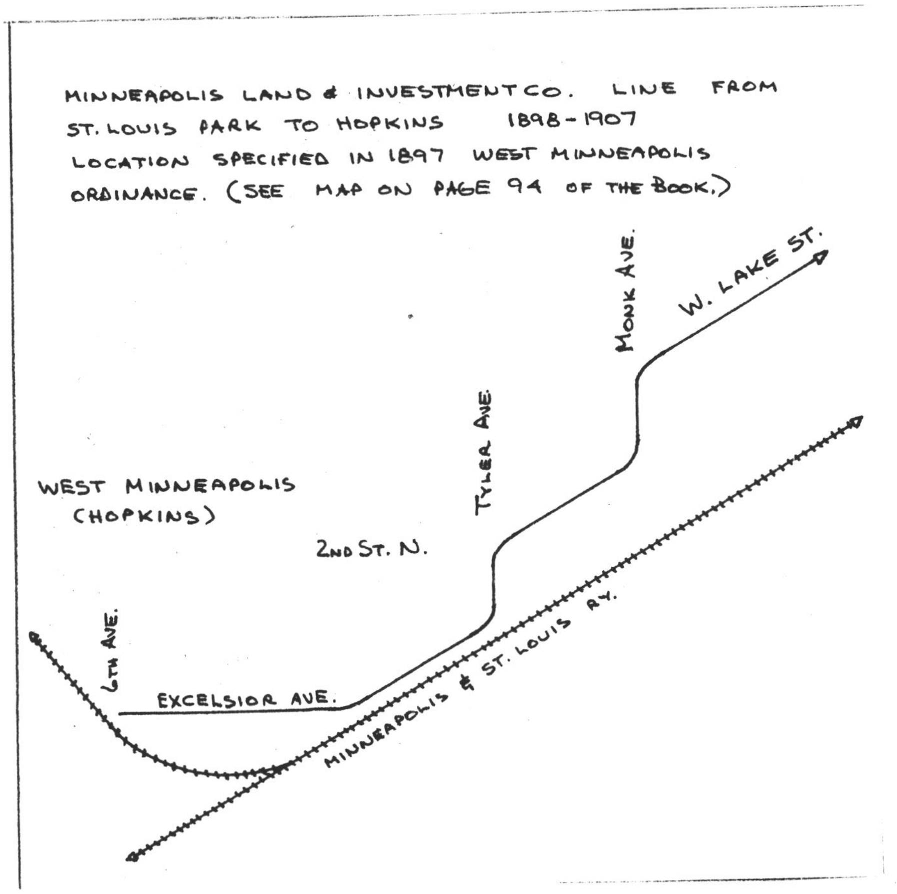
1892 was a boom year for the industries located on the line, but 1893 proved disastrous. The Monitor Manufacturing Co. closed down for one year, the Minneapolis Esterly Harvester Co. failed, and the Thompson Wagon Co. was destroyed by fire. As the nation recovered from the 1893 financial panic, St. Louis Park's fortunes also improved.

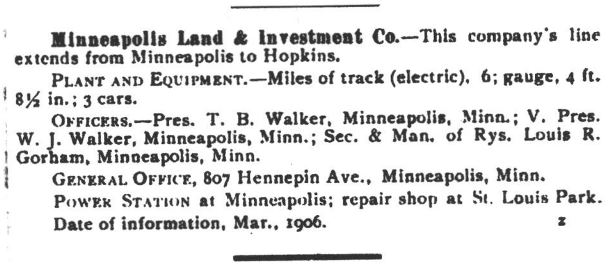
Work began in August,1897, on an extension of the line from St.Louis Park to Hopkins. The Village of West Minneapolis passed an ordinance September 23, 1898, covering construction and operation of the extension, which ordinance was accepted by M.L.&I. Co. November 15, 1898. The location of this line as specified in the ordinance is shown on the map on SUPPLEMENT page 147. Track laying was not completed until January, 1899; regular service began January 16th.

October 7th ?

On October 26th or 27th, 1902, lightning struck the carhouse @ Brownlow Ave. starting a fire which destroyed the building together with one car. In 1904 a tornado damaged the rebuilt carhouse and flipped one car upside down at the St.Louis Park end of the line. MSR records indicate that cars 791, 792 and 795 were used on the St.Louis Park line. A note on the shop record card for 795 stated that it "came into the shop 9-7-1904 to be repaired for ~~sale~~ loan to St.Louis Park line: new headlights, stove and upholstering; register and rheostat put in good shape. Delivered 9-10-04. Returned 10-1-04."

TCRT's wholly owned subsidiary, the Minneapolis & St.Paul Suburban Railway Co., acquired the property November 12, 1906, for $40,000. The bill of sale specifically EXcluded the carhouse at St.Louis Park and three waiting stations: 29th & Hennepin, St.Louis Park, and Hopkins.


MINNEAPOLIS LAND & INVESTMENT CO. LINE FROM ST. LOUIS PARK TO HOPKINS 1898-1907 LOCATION SPECIFIED IN 1897 WEST MINNEAPOLIS ORDINANCE. (SEE MAP ON PAGE 94 OF THE BOOK.)


Minneapolis Land & Investment Co.—This company's line extends from Minneapolis to Hopkins.

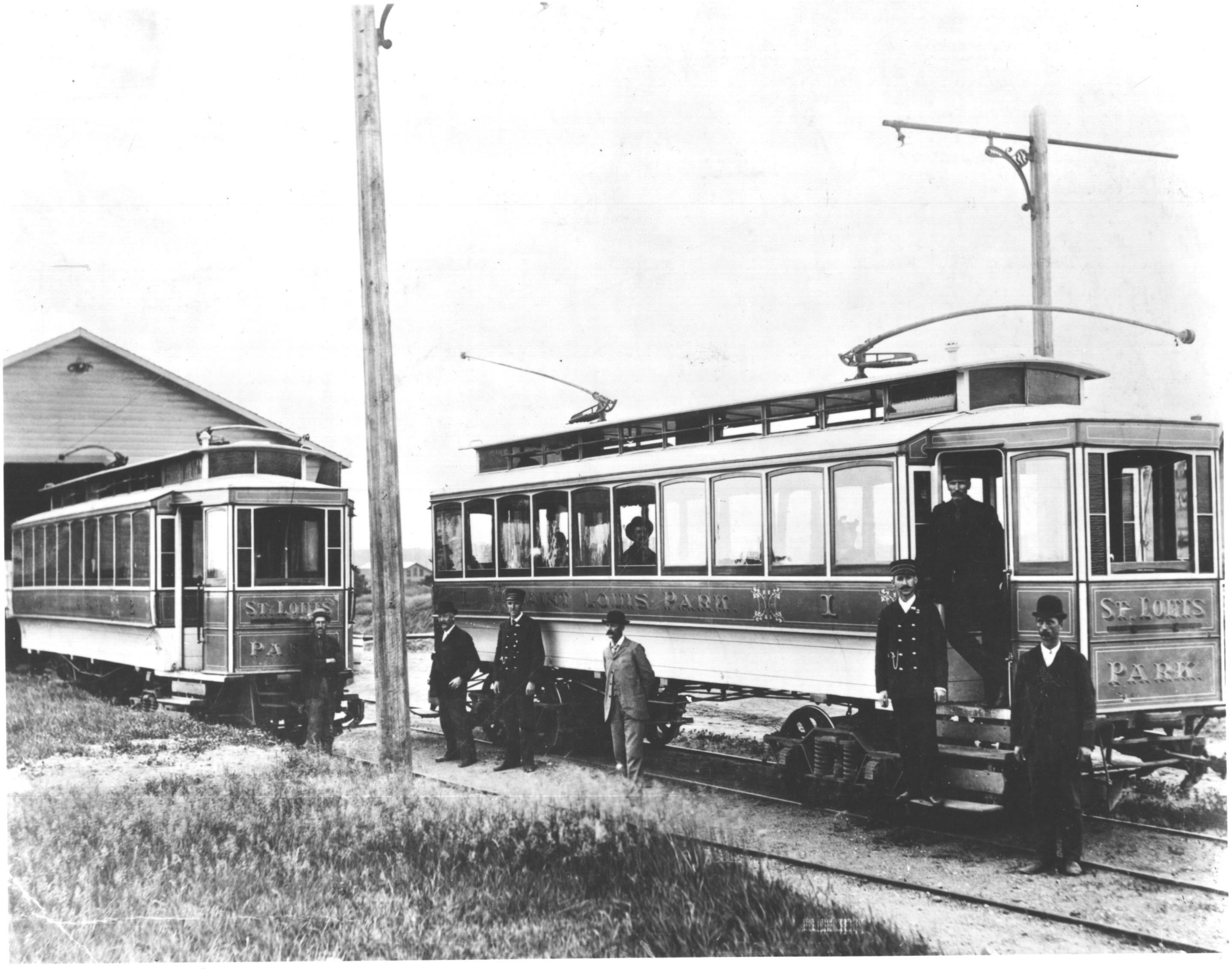
PLANT AND EQUIPMENT.—Miles of track (electric), 6; gauge, 4 ft. 8½ in.; 3 cars.

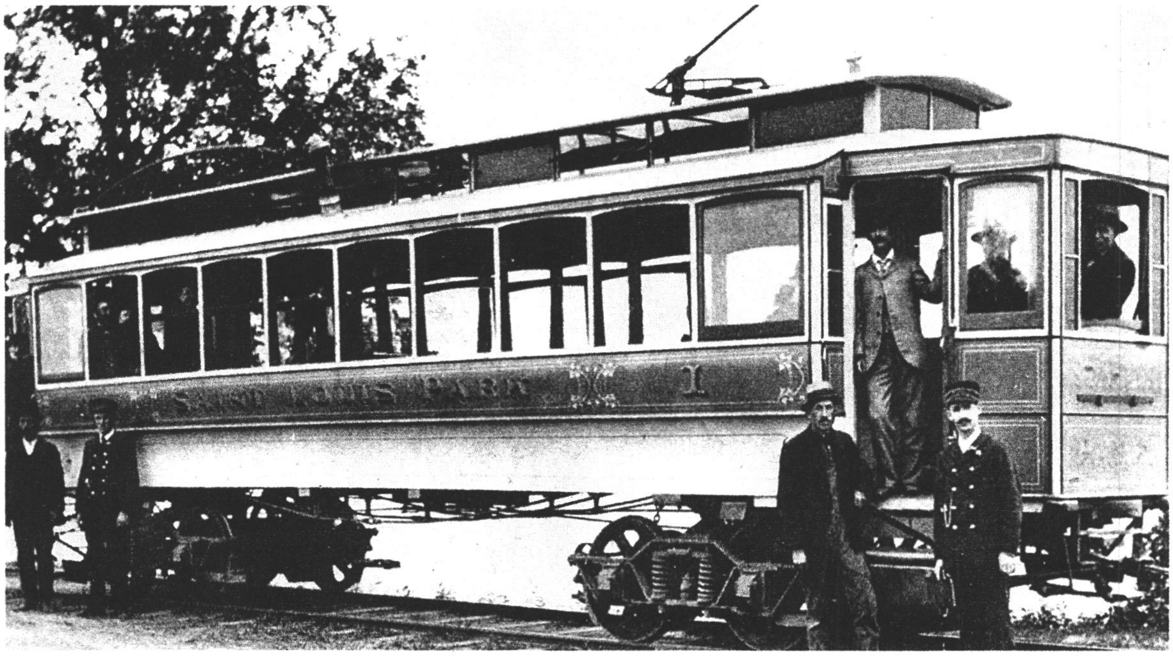
OFFICERS.—Pres. T. B. Walker, Minneapolis, Minn.; V. Pres. W. J. Walker, Minneapolis, Minn.; Sec. & Man. of Rys. Louis R. Gorham, Minneapolis, Minn.

GENERAL OFFICE, 807 Hennepin Ave., Minneapolis, Minn.

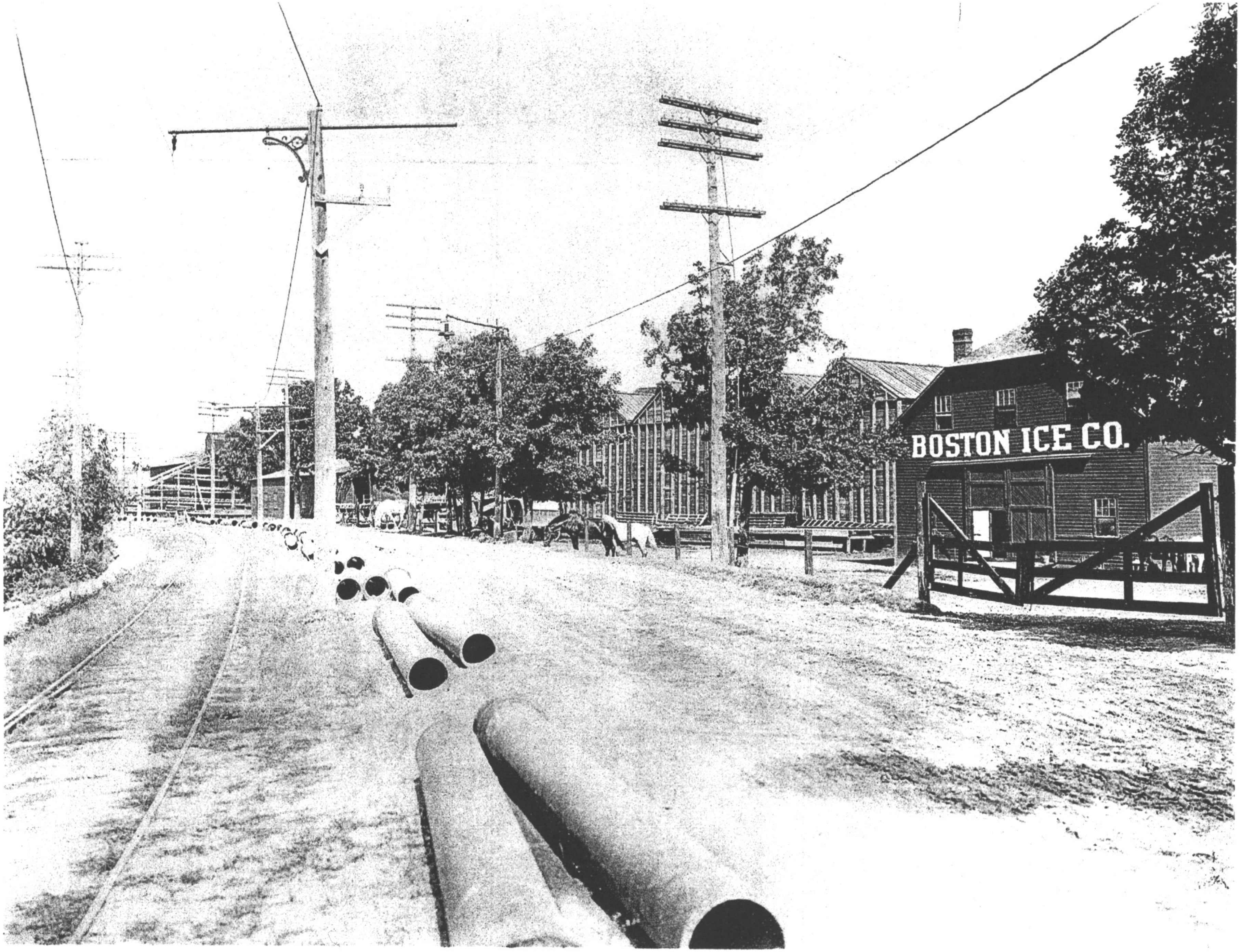
POWER STATION at Minneapolis; repair shop at St. Louis Park.

Date of information, Mar., 1906.


ST. LOUIS
PAS
2
1
SAINT LOUIS PARK
1
ST. LOUIS
PARK



Minneapolis Land & Investment Co. car 1 on the St. Louis Park line right-of-way at Lake Calhoun about 1893. (Minnesota Historical Society collection)


BOSTON ICE CO.

4405

1902 Lake Calhoun
north shore St & line

Minneapolis & St. Paul
Electric Track
Construction

ELECTRIFIED TRACK CONSTRUCTION

1892
MINNEAPOLIS

On	From	To	Date Completed
	Double Track built:		
Penn Ave. N.	30th Ave. N.	32nd Ave. N.	
3rd St. N.	Hennepin Ave.	3rd Ave. N.	
3rd Ave. N.	3rd St.N.	Washington Ave. N.	
Hawthorne Ave. N.	Lyndale Ave. N.	Aldrich Ave. N.	August 4th
Aldrich Ave. N.	Hawthorne Ave. N.	Laurel Ave.	August 4th
Laurel Ave.	Aldrich Ave. N.	Irving Ave. N.	August 4th
	Single Track built:		
Laurel Ave.	Irving Ave. N.	Oliver Ave. N.	August 4th

1892
St. PAUL

Double track built on Jackson St. from 5th St. to Maryland Ave., completed May 12th. According to the corporate minute book this line was single track from 13th St. to Maryland Ave.

Double track built on Como Ave. from Front St. and Dale St. on Front St., Chatsworth St., and Van Slyke Ave. to Como Park, completed September 7th. A loop was built in the Park near the end of Van Slyke Ave., described in a directory as bounded by Churchill Ave., Lexington Ave., and Langford (Como) Ave. This loop was ~~relocated~~ replaced during 1904 and ~~later replaced with~~ plus a wye. at Hamline Ave.

The corporate minute book also mentions double track built on Snelling Ave. from Minnehaha Ave. to University Ave.

1893
MINNEAPOLIS

On	From	To	Date Completed
	Single Track built:		
Bryant Ave. S.	38th St. W.	46th St. W.	August 26th
Central Ave. N.E.	29th Ave. N.E.	40th Ave. N.E.	August 29th
	Second Track added:		
Emerson Ave. N.	20th Ave. N.	26th Ave. N.	
	Double Track built:		
31st St. W.	Nicollet Ave. S.	4th Ave. S.	
6th Ave. N.	Penn Ave. N.	Russell Ave. N.	November 23rd

1893
St.PAUL

On	From	To	Date Completed
	Single Track built:		
Prior Ave.	St.Anthony Ave.	University Ave.	September 30th
	Double Track built:		
Rondo Ave.	Dale St.	Miller St. (Avon St.)	August 14th.

East 7th St. cablecar line conversion

As the electric cars were operating in the snow more effectively than the cablecars and the grade on this line was not beyond the capacity of adhesion, electrification was undertaken, the work being completed September 1st.

1894
St.PAUL

Track built on Earl St. from Hastings Ave. (Hudson Road) to Indian Mounds Park, completed May 24th. Earl St. was single track from Mound St. to Pacific St., with a loop at Indian Mounds Park; the remainder was double track.

Single track built on Stryker Ave. from Winifred St. to Annapolis St., completed July 1st. A crossover was installed on Winifred St.

1896
MINNEAPOLIS

Second track added on Douglas Ave. from Hennepin Ave. to Knox Ave.

1897
MINNEAPOLIS

Track abandoned on 3rd St. N. from Hennepin Ave. to 3rd Ave. N. and on 3rd Ave. N. from 3rd St. N. to Washington Ave. N.

Double track built on 5th St. N. from Hennepin Ave. to 6th Ave. N. Track abandoned on 6th Ave. N. from Washington Ave. N. to 5th St. N.

1898
MINNEAPOLIS

Second track added on Nicollet Ave. S. from 37th St. to 40th St.

Double track built on Como Ave. S.E. from 15th Ave. S.E. to Eustis St., connecting with newly-built St.Paul trackage to form the second interurban line between Minneapolis and St.Paul. Opened July 1st as the "Como-Interurban-Harriet" line.

1898
St.PAUL

Single track built on 3rd St. from Robert St. to Wacouta St., and on Wacouta St. from 3rd St. to 5th St., completed November 1st.

Track abandoned on Edgerton St. and Reaney St. and relocated to Minnehaha Ave. and Payne Ave.

Double track built on Como Ave. from Eustis St., where it connected with newly-built Minneapolis track, to Langford Ave. (later Como Ave.), and on Langford Ave. from Snelling Ave. to Como Park, connecting with existing St.Paul trackage, to form the second interurban line between Minneapolis and St.Paul, opened July 1st, and also known in St.Paul as the "Como Interurban" line.

As financial conditions improved plans for the conversion of the Selby Avenue cable line to electric operation were developed. The cable line was electrified from downtown St.Paul to Chatsworth St. during 1898 except for installation of a modern counterweight system on Selby Hill (described in detail separately) to overcome the 16% grade. Cable cars ceased operating June 3rd. Electric cars were re-routed over the Rondo Ave. line, using temporary track on Farrington St. between Rondo Ave.and Selby Ave. to provide service during the construction period. The first electric car ascended Selby Hill on the new counterweight system August 3rd.

Office DEPOT®

TRACKS.

SRJ FEB 1893

The lines of the two cities embrace 250 miles of single track, of which ten miles are operated by cable and the balance by electric power. The tracks are laid in part with seventy-eight pound, six inch girder rail, spiked direct to the ties, and a sixty pound, five and three-quarters inch T rail of special design, joined with long and deep splice bars. Tracks laid with the T rail give the best satisfaction, and this has been adopted as the standard and is being laid on the paved streets as well as on the suburban lines. While there has been no special ordinance allowing the use of T rails on the paved streets, the city authorities do not object to their use, and they are also acceptable to the general public as they do not interfere with vehicular traffic. The rails are laid on wide hewn ties, spaced two feet apart. An inch board is placed above the ties on which the paving rests, and an inch strip is placed on the inside of the rail to provide a space between the T rail and paving for the wheel flange. The importance of using wide ties was strikingly illustrated by an experiment made on the interurban line between Minneapolis and St. Paul, where T and girder rails were laid upon six inch sawn ties, but the track went down, the ties sinking into the soil, so that it became necessary to relay the track with wide hewn ties, which were laid close and thoroughly tamped, and the girder rails replaced by T rails. The joints, however, on this line need constant attention, and are a little low in some places. In both cities a number of the electric lines converge to one point and make a common loop over which most of the cars pass. From the common center the cars are dispatched at proper intervals.

IT IS $5,000 SHY
Minneapolis Tribune (1867-1908); Mar 9, 1892;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 5

IT IS $5,000 SHY.

The $25,000 Bonus for the New Interurban Line Referred To.

Robbinsdale to Have Through Service Soon—Thirty-First Street Power Station Nearly Ready.

Subscription lists for the completion of the Langford avenue line from St. Paul to connect with the Como avenue line of the Minneapolis system were submitted at a committee meeting of property owners yesterday afternoon. The cash subscriptions footed up to $8,000 and in addition to this real estate to the value of $12,000 had been given. This subscription is the result of a canvas which has been conducted with great perseverance and the committee thinks that the total of $20,000 is about all that can be raised.

Some time ago those interested held a conference with Thomas Lowry, who stated that he could connect the two lines for a bonus of $25,000, one-third of which should be in cash. The subscription falls somewhat short, but before Friday a sub-committee will call upon Mr. Lowry, state what has been done and endeavor to gain his acceptance of the best that the property owners can do. As they will also propose to do the grading as soon as the weather will permit they feel encouraged to believe that the road will be built before the next state fair, at which time it will afford a very considerable income.

TO WALK NO MORE.

The Gap Between the Robbinsdale and Lowry Lines to Be Closed Soon.

Residents of Robbinsdale will soon be able to ride all the way to the city, instead of having to walk half a mile from the terminus of the North Side railway to the electric line on Penn avenue, as the gap between the two lines will be closed as soon as the frost is out of the ground. The line from the eastern terminus of the North Side road will be extended along Thirty-second avenue north to Penn avenue, where the city electric line is reached. A motor and car combined will be put on the track at first. This will soon be followed by another, so as to have cars running every 15 or 20 minutes. The fare to the people residing at Robbinsdale will be about the same as the rates within the city limits, as an agreement has been made with Mr. Lowry which will enable the North Side people to accomplish this. Commutation tickets will be issued to residents at Robbinsdale which will be honored by the city railway, and the fare will thus be 6 cents for the whole distance, 3 cents on each road. The old line, which has been in running order since last summer, is two miles long, and the new extension will be half a mile. This makes the whole distance from Robbinsdale to the center of the city 4½ miles. Property owners along Thirty-second avenue north have given several pieces of land to the company in order to help the project along.

ALMOST READY FOR USE.

The Thirty-First Street Power House About Completed—Some Big Cars.

The new power house of the Minneapolis Street Railway Company at Thirty-first street will be put in operation April 1 and then the company will control engines having a total capacity of 5,600 horse power. This new plant will be complete in every detail. The 10 big engines are now in place and await only the necessary connection with the steam plant. About one hundred men will be employed in and around the plant.

The new interurban and Lake Harriet cars now being built at the Northern shops will be supplied with the short motors which are expected to arrive here this week. It is claimed for the short motors that they will never wear out, and, being gearless, need no repairs. The wheels on the trucks of the new cars are 33 inches in diameter and are 5 feet 2 inches apart on each truck. The two trucks will be 21 feet apart from center to center, and the big handsome bodies resting on them from end to end will measure 36 feet. The motors will weigh three tons or just 1,500 pounds more than the heaviest cars now in use. They will stand as high as a Pullman sleeper and when they run under the Milwaukee viaduct at Eighth avenue south will clear the bridge by only about three inches. The grade of Washington avenue at that point may have to be lowered.

BURIED
Minneapolis Tribune (1867-1908); Mar 1, 1893;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 1

BURIED.

The City Groaned Under an Avalance of Snow.

STREET CAR SERVICE UTTERLY DEMORALIZED.

Snow Abounded Everywhere Yesterday Morning When Citizens Arose to Resume Their Daily Labor—Streets Had to Be Opened Out by Snow Ploughs—The Street Railway Got a Few Lines at Work During the Day, But the Service Was Very Irregular—The Railroads Had a Bitter Experience—Many Trains Still Blocked, and Others From Four to Twelve Hours late—Only One Train From Minneapolis Got Into Chicago Yesterday Morning on Anything Like Schedule Time—Reports From the Northwest.

When yesterday morning's sun peeped above the snow-blown horizon, then clambered boldly up over the snow drifts and and looked down upon Minneapolis, it discovered a snow bound city. Billowy and white the coverlet of snow lay silent over everything and the whole city seemed drowsy beneath it.

From Camden place to Midway and from New Boston to Minnehaha, the snow lay in white unbroken stretch over roof and lawn and street. It showed no partiality for any portion of the city and piled in deep drifts about the corners in the business part of town and heaped as generously in the entrance of the proud emporium of trade as at the doorway of the humblest suburban residence. It drifted lazily over a few stranded and abandoned street cars and, regardless of the expense it was entailing upon the Street Railway Company, packed the tracks with impassable drifts. Where the day before traffic had been busiest and hundreds of feet passed to and fro, now there lay unbroken snow. It was the transformation of a single night.

However, when Old Sol rose it was into a clear sky. Only an occasional flurry rose and as soon died away. The storm had almost completely abated. And such a snow storm it had been. It was not a blizzard. The wind was not excessively high and the snow was not light enough to be driven and drifted. Neither was it very cold. But the snow was damp and came down in generous six ounce flakes and stayed where it fell. Of course there was wind enough to drift it considerably, but for the most part it lay as it fell, three feet deep on a level. Being damp it packed firmly, which made this one of the hardest possible storms to handle.

The Street Railway Company was the last to give up the battle with the storm, and on the important lines tried to run plows all night to keep the tracks clear for the morning, but not long after midnight this had to be suspended and within a few hours the snow had completely and effectually tied up the whole system of Minneapolis street railway. The first things out in the morning were the street snow plows. With four horses apiece, wallowing through the drifts, the work of making the streets passable was begun. The principle streets were plowed through first. Later the work on the street railways was resumed. Gangs of men with snow plows and shovels tackled the tracks to make them passable and the stranded cars were dug out. Altogether considerable havoc was being made with the "beautiful," and when later a small army of citizens armed with snow shovels proceeded to dig themselves out of their dwellings and see "where they were at," things began to assume a different aspect.

It was just an old time snow storm and on the whole Minneapolitans rather enjoyed it, even if they had to walk to their work and return in the same manner.

THE STREET CARS.

One of the Worst Tie-Ups Experienced in This City.

After one of the worst "tie-ups" in its history the Minneapolis street railway is again, for the most part, in running order and the majority of the citizens will ride down town in the streetcar this morning as usual. Most of the East Siders, however, will walk. Only two lines which reach the East Side are in operation, and these are the Interurban and Lyndale which, however, only pass along the outskirts of East Side population.

All night the work on the Central avenue, Sixth street and Eighth avenue south line was kept up and it will probably be in operation early this morning.

The University line, with its Como and Oak street branches, is dead and will probably not be running before noon. Nor is the second street northeast line open, although on both those lines small armies of men have been engaged. Last night about 10 o'clock a snow plow on the Eighth avenue line was bucking snow on Sixth street and Nicollet and having hard work of it, spitting blue lightning from trolley and motor. This line is proving one of the hardest in the city to open. The Hennepin avenue line is not entirely open. The Kenwood line will be one of the last to loosen up, although cars will be running upon it as soon as possible. The Plymouth avenue line will be open some time this morning.

So far as the lines are open street cars will begin running this morning at the usual time and will continue to run on the usual time.

Last night the cars were somewhat irregular and did not run as late as usual. The last car on the Fourth avenue line went at 10 o'clock

The following lines will be in operation this morning: Bloomington avenue, Cedar avenue, Camden place, Emerson, First avenue, Fourth avenue, Interurban, Lyndale, Minnehaha, Riverside, Twentieth avenue north and probably the Central, Sixth street and Eighth avenue south.

By noon it is hoped to have the University and Western avenue lines running and the Kenwood and Plymouth will lines probably not be open so soon.

To dwellers in the city the salient feature of the big snow storm was the complete blockade the street railway.

Courageous attempts had been made upon the First avenue line and other of the principal lines of the city to keep them open, by means of running snow plows all night, but this had to be finally abandoned and the street railway system was at the mercy of the drifting snow. The last line in the city to give up the fight was the Interurban, whose big cars seemed better able to buffet with the snow than ordinary cars. But even these had to give up. One Interurban car spent the night snowed in at Nineteenth avenue. Lake Harriet and Lyndale cars had to be abandoned at various points along the line. Two cars on the University line spent the night abandoned at the corner of Fourteenth avenue and Fourth street southeast.

In the morning the whole system was completely tied up and helpless. The first thing to be done was to get a gang of men to man the plows and to shovel through the otherwise impassible drifts. This was easily done and soon a small army of laborers was at work to loosen things up. It was hard work, but by noon the Interurban line, the Washington avenue north lines, including the Camden place, Emerson and Twentieth avenue north; the Bloomington avenue line and the lines running out Washington avenue south, including the Riverside, Cedar avenue and Minnehaha lines, were opened. Shortly before 3 o'clock the Fourth avenue line was opened up to Thirty-first street. Great difficulty was met on this line in bucking the snow off Third street. Cars on the First avenue line got through from Thirty-first street about the same time, and the Lyndale avenue line was open its full length on both sides of the river shortly after 3 o'clock.

IS SIMPLE BUT GREAT
Minneapolis Tribune (1867-1908); Oct 2, 1895;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 7

IS SIMPLE BUT GREAT

A NEW SYSTEM OF JOINING STEEL RAILS.

It Is Being Applied to the Twin City Rapid Transit Company's Tracks—The Work All Being Done at Night—Eight to Ten Tons of Moulten Iron Used Nightly From a Portable Furnace—Eighteen Months Required to Finish the Contract Which Will Employ 100 Men.

Passengers on the Interurban line coming from St. Paul may have noticed between Cedar and Tenth avenues south a relief from a regular jar that a car makes when passing joints in the rails.

The reason for it is the new system of joining rails that is being introduced in this city by the Falk Manufacturing Company, of Milwaukee.

Albert Hoffman, the inventor of the new system, is in the city in charge of the work, and yesterday explained the new process to THE TRIBUNE. The great feature about it is its simplicity. It is so simple that no skilled labor is required to do the work, and men are hired in every city in which the system is introduced. Instead of using plates to join the rails, moulds are put on each side of the track, and molten iron is poured in. Between the ends of the rails small wedges of steel are inserted, and when the hot iron is poured in the steel melts and makes the two rails one.

Before Mr. Hoffman had tried his system scientists laughed at it, claiming that it would not work, owing to the expansion and contraction of the rails when exposed to extreme heat or cold. By melting the ends together and strengthening them, however, the joints are made even stronger than the rails themselves, and the latter will stretch or even break before they will be affected.

Strange as it may seem, the foundry for the moulds and melting the iron is carried right along with the work. It is Mr. Hoffman's patent, also, and consists of an upright furnace and boiler in which from eight to ten tons of pig iron are melted every night. When one considers that the force only works from the time the cars stop at night until they start in the morning, this will seem a large amount of metal for a small portable furnace to melt.

When the rails are all joined the result is one long smooth rail over which the cars glide without the least bit of jarring, which has been an unpleasant feature of street car travel in the past. The wear on the rails is lessened by it, also, and the wear on the electric parts of the cars is much less, as there is no jolting to loosen them.

To finish the contracts Mr. Hoffman has made with the Twin City Rapid Transit Company will take at least a year and a half, during which time over 100 Minneapolis laborers will have work on the tracks.

READY TO BUILD: NEW INTERURBAN LINE WILL BE COMPLETED IN JULY Mayor ...
Minneapolis Tribune (1867-1908); May 22, 1898;
ProQuest Historical Newspapers: Minneapolis Tribune (1867-1922)
pg. A1

READY TO BUILD

NEW INTERURBAN LINE WILL BE COMPLETED IN JULY.

Mayor Doran's Signature to the 41-Year Franchise Granted By the St. Paul Common Council Removes the Last Obstacle—The Improvement Involves the Construction of About Four Miles of Double Track and Work Will Be Commenced at Once—Lake Como Will Not Be Boomed at the Expense of Lake Harriet.

Mayor Doran, of St. Paul, has given a sort of Grover Clevelandesque consent to the new 41-year franchise of the Twin City Rapid Transit company, granting it permission to complete the Como avenue extension of its tracks and inaugurate a new Interurban service. The St. Paul mayor heaps coals of fire on the inconsistant heads of the St. Anthony Park portion of his constituents, who voted with a large majority for the new city charter, limiting franchises to 15 years, but who now raise up and demand the granting of this 41-year instrument. But no matter what the mayor of St. Paul may think about the franchise personally, he has signed the ordinance, the street car company will accept it forthwith, and before dog days Minneapolis people who must go to St. Paul will have the choice of two routes.

As a matter of construction the new line involves the building of about four miles of double track to connect the Como avenue line of this city with the Como line of St. Paul. Beginning in Minneapolis, the new Interurban will use the tracks of the Hennepin avenue line north, cross the river to Central avenue, on the Fourth avenue line to the university, on Fifteenth avenue southeast to the northeast corner of Van Cleve park, where the Minneapolis part of the line now ends. The new tracks will be built eastward on Como avenue to the city limits; on the St. Paul side of the line it will follow the country road to Langford avenue and follow the windings of that thoroughfare through St. Anthony Park, eastward on Langford to Lexington avenue and through Como park to Como avenue and thence into St. Paul. From the point where it enters Langford avenue in St. Anthony it will use the tracks of the Hamline line past the agricultural experiment farm and the state fair grounds to Snelling avenue; from that point to Como park the line will be new.

The opening of this new line means a great deal to the dwellers of St. Anthony Park, whose only present means of reaching Minneapolis or St. Paul is by way of the Hamline line. There was a time when they were independent of the whole race of trolley cars, the steam roads which passed through that pretty suburb furnishing all the accommodations required for reaching either city. But the opening of the interurban made the running of suburban trains unprofitable and the lack of passenger service has been a nightmare to those real estate agents who found themselves long on St. Anthony Park property. It is not loking too far into the future to say that the completion of the new interurban will be worth thousands of dollars to the sections of both cities through which it will run, to say nothing of the gain in convenience for those who will be the patrons of the line.

In distance the new line will be something like a mile longer than the old, but the running time between the cities will be about the same, the new line gaining time by being subject to fewer stops. The equipment will be substantially the same as that on the old line The old portion of track on the Hamline line will need to be relaid, as may be other parts of the line now in service, but for the present the company will content itself with closing up the gaps so the interurban service may be inaugurated at the earlist day possible. Improvements in tracks and the best equipment will be subjects which can be decided later.

The company will begin the work of grading for the new track at once, and track laying will be pushed as rapidly as possible. As many men and teams as can be worked will be put to work next week, and by the first of July, or soon thereafter, the new line will be ready for business. It is not the intention of the company to make special efforts to make Como a more popular resort for pleasure seekers of the two cities. There may be band concerts twice or three times a week as heretofore, and an occasional evening devoted to fireworks, but the business which the line will command because of its convenience for those who live near it is what will be depended on for profit. There will be no effort made to boom Como at the expense of Lake Harriet.

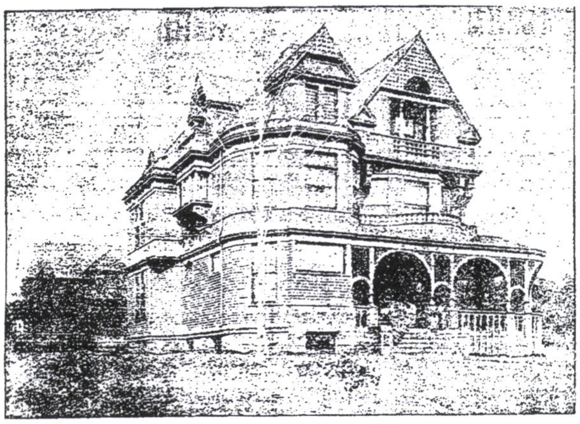
THE NEW INTERURBAN LINE: Sister Cities of Minneapolis and St. Paul ...
Minneapolis Tribune (1867-1908); Jul 1, 1898;
ProQuest Historical Newspapers: Minneapolis Tribune (1867-1922)
pg. 3

THE NEW INTERURBAN LINE

Sister Cities of Minneapolis and St. Paul United Still Firmer by a Tie Which Shall Bind Them in a Closer Relationship, and Broaden Each for the Other the Spirit of Friendship and Commerce.

Possibilities of the Future in the Territory Now Opened by a Splendid Traffic Arrangement.

Beginning with today, the Twin Cities have a new tie binding them, their interests and their people together. After no fuss or noise, no sounding of trumpets, no beating of tomtoms, no steam calliope overtures, and after only little more than a month of actual construction work, a new interurban electric line is to be put in operation between Minneapolis and St. Paul today. The first car will be run through this afternoon. The line is substantially built and equipped, and operates through territory new to many of the people of the two cities; and it will be a most important addition to the traveling conveniences of both.



RESIDENCE OF W. W. CLARK, 35 LANGFORD PARK PLACE, ST. ANTHONY PARK.

It would be hard to say when the new interurban line was conceived or finally decided upon. The managers of the Twin City Rapid Transit company are ever on the alert to improve the service. If the growth of any particular section of the city seems to justify more cars or closer schedules, the service is improved to that extent; and if a section of the city is built up beyond the street car service, some line is extended to reach the new addition. It is seldom that the people of Minneapolis have had just cause to complain of the insufficiency of the street car service. Beginning with the old-time horse cars, and advancing through the stages of cable and steam power houses, the company now operates every car on its lines by electricity generated by those tireless wheels at the foot of the lowest cataract of St. Anthony falls. And in a few months more, it is hoped, the completion of the dam on the rapids above the city will add still more to the efficiency of the supply of power, and to the street car service generally. What do the people of Minneapolis not owe to the mighty and ceaseless flood of the matchless Mississippi?

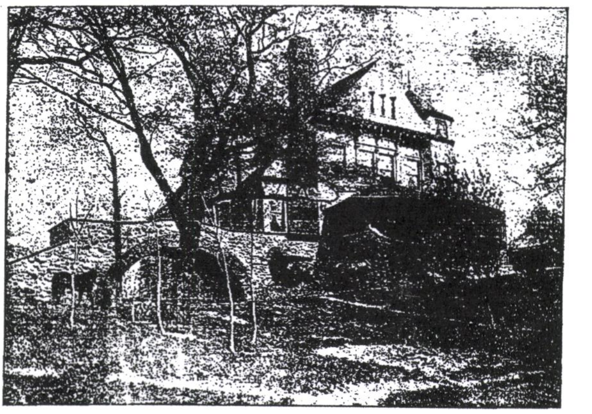
* * *

The new interurban route has been described in these columns, but now that the line is completed and in operation, those who would travel over it will be interested in learning just the route they will take. In Minneapolis the cars will circle the city over the same loop followed by the old interurban, on Hennepin avenue to Sixth street, to First avenue, to Washington avenue, to Hennepin, and east on that avenue across the steel arch bridge. Across that bridge is unknown territory to thousands of the people of both cities who are frequent interurban passengers. Nicollet Island, with its busy factories and stores, and its pleasant residence streets and well kept grounds, is to them a strange city; and they know little more of the half of Minneapolis which lives, moves and has its being on the east banks of the river. The new interurban trundles out Central avenue to Fourth street southeast, and then turns into that pretty thoroughfare. The old Oak street and Como cars have used that street for years, and all visitors to the State University have admired the beautiful residences, spacious grounds and cozy homes which abound there. From autumn to spring the street is the home of students. Caps and gowns can be seen almost any hour of the day—or night, and the most wonderfully and fearfully made college yells ever devised have been invented in the room of some 'varsity student in Fourth street. In that same street is Holy Trinity Episcopal church, with its pretty, grassy lawn and ivy-covered walls, and the rectory hard by; it is the oldest church of that denomination in the city. Four blocks further on is the modern style Andrew Presbyterian church, and still further on is Olivet Baptist. It is clearly a street of quiet homes and Christian environment.

At Fifteenth avenue, called Pleasant street, through the University grounds and on south to the river, the Como cars and the new interurban turn to the left. The turn is made high in air on the viaduct over the railroad tracks. Then there is a run of eight blocks to and past pretty little Van Cleve Park. The old Como avenue line ended at the northeast corner of the park, where the cars were turned on a "Y" and started on their return trip. The Minneapolis end of the new interurban line rightly begins where the Como line ends.

* * *

If the line so far is more or less familiar to Minneapolis people, it is safe to assume that their first ride over the new tracks will take them through unexplored territory. It is still Como avenue, to be sure, but for all practical purposes Como avenue in that part of Minneapolis is a country road. The scene is rural; the suburbanite hoes his garden in peace, and the family cow stands tethered knee deep in the rank prairie grass. At one time some ambitious land owner may have entertained rosy dreams of the future greatness of that part of the city, and he demonstrated the faith that was in him by constructing sidewalks and planting trees along the sides of the street. The sidewalks are out of repair now, and the trees have a ragged looking air of forlornness and neglect. That sort of thing is the rule as far as Twentieth avenue, or to the crossing of the St. Paul & Duluth railroad; then all semblance to such city conveniences as sidewalks, or such luxuries as shade trees, vanish, and one is in the country for sure. Over to the right are the big elevators, and one can see the industrious little switch engines pushing and tugging at strings of grain-laden cars, but all that belongs to Minneapolis as a great grain market, not as a support of an extensive system of street railways.



RESIDENCE OF JOSEPH ELSINGER, LANGFORD AVENUE, ST. ANTHONY PARK.

At Twenty-third avenue, which one may recognize by the weather-beaten sign on the post which marks the corner, and a quarter of a mile to the left, is a cluster of houses, detached and alone, for all the world like some country village taking on corporate airs on the coming of a new railroad. All that is needed to complete the impression is a switch running to a saw mill and a newly built station house and telegraph office. Twenty-fifth avenue is different from the pastures on either side of it only in the wire fences which mark its boundaries. There are no more streets or avenue after that; only pastures for dairy cows, meadows, and potato patches. For a straight half a mile the road runs to the railroad cut-off, passing under the tracks of that line, and then makes a gentle curve to the right through groves of scrub oak and more meadows. On the hills to the left are the Rose Hill nurseries, the first St. Paul business enterprise on the new line.

At the curve east of the cut-off the line strikes a gentle up grade which leads it to the hill-tops of St. Anthony Park. It takes many a curve, some of them quite sharp, to get the line through that pretty town, to the school house, where it connects with the St. Anthony Park terminus of the Hamline line. Since the beginning of this new interurban route the residents of St. Anthony Park have been without other street car service than that afforded by the old interurban, which for many of them is more than a mile away. From St. Anthony Park to Snelling avenue to the southeast corner of the state fair grounds, late Camp Ramsey, all the old rails were torn up and relaid with the new and heavy steel which the new service will require. The Hamline cars now stop at the gates of the fair ground, where they will connect with the new interurban. From St. Anthony Park to Snelling avenue, and on to Como park the right of way is in Langford avenue. East of Snelling Langford has been widened and further improved by several cuts and fills. It is noticeable that from St. Anthony Park to Snelling avenue the company discontinued the use of side poles for the support of the trolley wires, but used the more sightly center poles with cross arms. Nothing common or cheap is allowed within the environs of St. Anthony Park.

* * *

There is quite a steep grade to climb when Como park is reached, about the only one on the whole line, and after entering the park there are few rods of straight track. The right of way is through the south end of the park and over the oak knobs and across the marshy thickets. A bridge in the park, over a dry gully, was one of the last gaps to be closed this week. Emerging from the corner of the park the line passes the St. Paul workhouse, and a few rods further on connects the Como line of St. Paul with the Como line of Minneapolis. Up to this time there has been no improvement made in the road way of the St. Paul Como line, that and other needed work being left for the construction gangs after the new interurban line is in operation.

* * *

So much for the right of way between the two cities. As a matter of engineering, the line did not present grave difficulties. Most of the way was over streets and roads which needed little in the way of grading, and only in two or three places was it necessary to do much filling or cutting. Yet the line is an easy one, and will be easier to operate than the old. The rails where new tracks were laid are 62 feet long, and weigh 80 pounds to the yard, much better and heavier steel than is laid on many of the steam roads of the country. All the way the tracks are well ballasted with earth and the streets and avenues put in good condition for the ordinary travel. Before the coming of winter the line will be as solid and substantial as it is possible to be made in that length of time.

If the line itself is as good as an electric line can be made to start with, the new equipment will be in keeping with it. Some mention has been made of the new cars which will be operated, but a trip over the line will be necessary to give one a perfect idea of the luxuriousness of a trip to St. Paul by the new interurban. The cars were built at the company's shops in this city, and are superior to any style of car now in use here. They are of the combined summer and winter type; the windows open low, the sash passing downward and out of sight when it is desired to have the windows open. When all the windows are down the cars are practically open cars, while in stormy or cool weather they can be made as comfortable as a closed car. Ten of them will be put in use on the new line, and will be run on a 10-minute schedule. The time between the two cities will be about the same as by the old line, faster time being possible on account of the easier track and fewer stops.

* * *

From the company's standpoint patronage for the new line must be the prime motive for its construction. All traffic between Minneapolis and St. Paul can be accommodated by the old line, so the earnings of the new must be gained from extra business along the line. So far as Minneapolis is concerned it must be owned that this city has somewhat the short end of the bargain. As has been shown, the line passes through open country after leaving Como and Twentieth avenues, and not many of the cars will be required to stop for passengers till they reach the summit of St. Anthony Park. And the residents of that little city are nothing if not loyal to their parent city. Still, it is not unreasonable to suppose that the stores of Minneapolis will gain new customers in the women of St. Anthony Park, who are acknowledged to be the best dressed women in either city, and that the wholesalers and jobbers of this city will gain new customers in the merchants who are established in St. Anthony Park. The business is pretty evenly divided now, but local wholesalers have been under the obvious disadvantage of a lack of traveling conveniences. There will be more St. Anthony Park men and women seen in Minneapolis than has been the case hitherto, and the company will profit from the business.

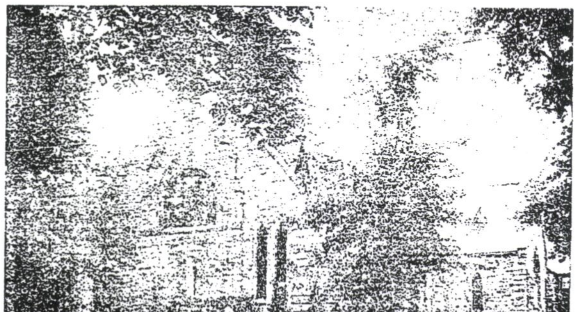
The state experiment farm and the state fair grounds will be sources of considerable revenue to the new line. The former place is well worth a visit to all who take an interest in agricultural affairs. The clean-looking buildings are in plain view of the cars as they leave St. Anthony Park, as are the plats of grain and field crops on the slopes of the hills. Further along on the same side of the road are the buildings of the state fair grounds. There is not much there now, but the place is frequently visited by horsemen who have strings of racers in training on the state fair track. Those who know the ropes out there seldom fail to see pretty sped work by some of the flyers in training.

* * *

Como park is the next and most promising source of revenue for the new interurban. Up to this time Minneapolis people who have visited that charming pleasure ground have been obliged to go by way of St. Paul, a roundabout journey that consumes too much valuable time when one only has a Saturday half holiday. If the old trip took an hour and a half, the new will require about half of that time or less, and the fare will be cut in two as well. There will be plenty of amusement at Como, too. Band concerts, boating, cycling and racing—everything to entice one out of doors. In summer weather the new line should make handsome returns on Como traffic alone.

The town of Como does not offer much in the way of business for Minneapolis, but there will be more from there hereafter than there has been in the past. The business houses of Como are two, by actual count. One of these is a grocery store owned by C. O. Anderson, 1620 Front street; the other a meat market, just across the way, owned by Fred Hessinger. Further down are five or six business houses, empty and boarded up. Time was when they were filled with activity and congenial spirits, but that was before Como became a dry town. Como is the residence town of the men who work in the Northern Pacific shops, which are close by. It is reasonable to conclude that many of the women of Como will make visits to the Minneapolis stores, now that they have so convenient and pleasant a way of traveling, for the sake of extending their shopping territory, if for nothing else. It will be the fault of Minneapolis merchants if the do not gain customers now that their territory is enlarged.

* * *

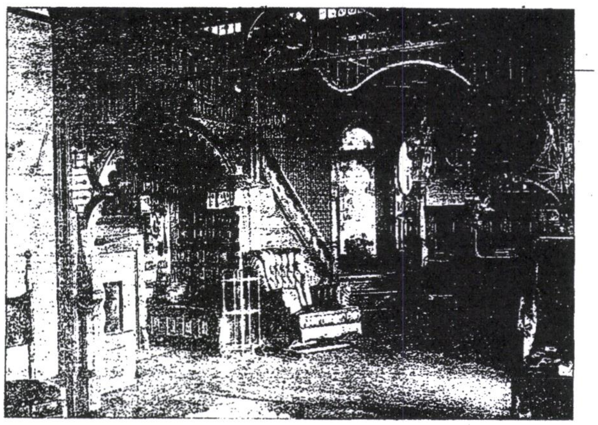


HOLY TRINITY CHURCH, FOURTH STREET AND FOURTH AVENUE SOUTHEAST, MINNEAPOLIS, ON THE LINE OF THE NEW INTERURBAN.

Aside from the great convenience this new line will prove to Minneapolis people who wish to visit Como park and the state fair grounds, either in fair time or at any time, the new interurban will be the greatest blessing to St. Anthony Park people. There was a time when no suburb in the vicinity of the Twin Cities had fairer prospects of becoming a popular residence district than that same park. Its location was all that the most exacting could ask. There were hill tops and hill sides, and a wealth of forest trees that no scheme of planting could have matched. Streets were laid out so almost every lot was a corner, and the owner could build his house to obtain any desired exposure or to face as many streets or grassy "places" as his fancy or means allowed. It was a place for the children. There they could run wild all the summer long, and emerge in the fall as brown as berries, and with rosy health that could not be obtained on the narrow confines of city lots. That the Park was making rapid strides in the direction of population is shown by the scores of modern homes which dot the hills and peep out from almost every grove.

The old interurban line was the doom of St. Anthony Park. It may not have been so intended, but results of earthly plans sometimes reach farther than the designers think and desire. Before that interurban line was built St. Anthony Park enjoyed the advantage of half-hourly train service on the Great Northern and the Northern Pacific railroads. The Park dwellers carried monthly commuters' tickets; they met at the trains, went to and from business together, and in every respect put on all the style they were entitled to as residents of the only fashionable suburb of St. Paul. They did not patronize the street cars because they did not have to. The quicker steam cars were good enough for them. The interurban did not get much business from St. Anthony Park, but it got all the business there was to be had between Minneapolis and St. Paul, and when it did that there was nothing for the railroads in running suburban trains. The trains were taken off, and the pretty suburban station at the Park fell into neglect. The Northern Pacific now has four trains a day which stop at St. Anthony Park station, and those are mostly for the accommodation of stockmen who have business at the transfer or at the stockyards. A motherly woman sits in the ticket office and knits to while away the time. Up on the hill the two-story station of the Great Northern road is boarded up and a sign proclaims that it is for rent. The wires still run into the deserted telegraph office, but the keys are still. In more modern and altogether business-like telegraph tower houses are the men who take train orders and work the semaphores. When that stage of St. Anthony Park was reached there was nothing for the property-owners to do but to make the best of it, which was bad enough. The steam roads deserted them for good; the interurban was a mile away, a dreadfully long way on a cold morning or after a deep snow; and the occasional car on the Hamline line, which penetrated as far as the school house, was only an aggravation.

* * *



RECEPTION HALL OF RESIDENCE OF W. W. CLARK, ST. ANTHONY PARK.

Perhaps it would not be fair to speak, excepting in very general terms, of the depreciation in real estate values caused by the change in transportation facilities of St. Anthony Park. The extensive improvements which had been planned or which were under way at the time were either dropped or were finished up in some cheap manner. Corner lots which had been held at thousands dropped to hundreds, and found a flat market at that. Some of them would have been donated gladly to anyone who would have paid the taxes on them. Changes were made, for some of the business men who lived there had to remove to locations where they could reach their places of business without so much delay and inconvenience.

Perhaps, too, it would be unfair to attribute all the distress of St. Anthony Park to the unsatisfactory street car service. Soon after the opening of the interurban line the hard times of '93 settled down on the country like a pall and the man who found himself the owner of real estate, mortgaged for most of the purchase price, knew he had an elephant on his hands. He shared his troubles with other people who had started enterprises while times were good and who saw ruin ahead if times got worse. In those years St. Anthony Park was proud in having in its limits Stryker Seminary, a select boarding school for young women, a fine, large hall filled with the pampered daughters of wealthy parents. But the seminary could not weather the financial storms, and the building is now used for a summer day school or kindergarten. It may never be what it was designed to be, a school home for young women, but if it remains only a kindergarten it will have cause to bless the day when the new interurban was opened through the park. And so it could be told of numerous other enterprises which languished and mourned a cruel fate, and to which the new line will come as an angel with healing in its winds.

The residents of St. Anthony Park are not to be accused of unbecoming conduct if, like the deacon when McKinley was elected, they let out a yell or two of joy when the car of their deliverance appears. They are planning a celebration in honor of the event, but just what turn the affair will be given is not yet decided; fireworks and a general exchange of courtesies between them and the street railway people will be part of the program.

* * *

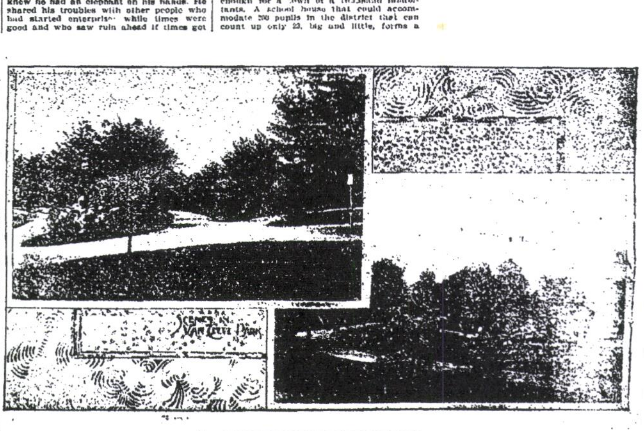
The college town of Hamline will not be in position to reap great benefit from the opening of the new line, although its position will not be made worse by any means. It is about as near the new line as the old and has the same means for reaching it, the Hamline cars and a transfer. If the prospective passenger does not care to wait for the Hamline car he has the privilege of walking the half mile to either interurban line. It will be all the same to the company, and will save a little work in the auditing department.

The village that was never built around the gates of the fair grounds may be one of the possibilities of the future. As the facile Mr. Ward used to remark, "there is fresh air enough there for a town twice as large," and there is a school house big enough for a town of a thousand inhabitants. A school house that could accommodate 200 pupils in the district that can count up only 23, big and little, forms a story of towering ambition hard to match in the annals of any quiet neighborhood. If that school house is allowed to remain empty after the new line is in operation the people of St. Paul are open to grave suspicions of unpatriotic conduct.

* * *

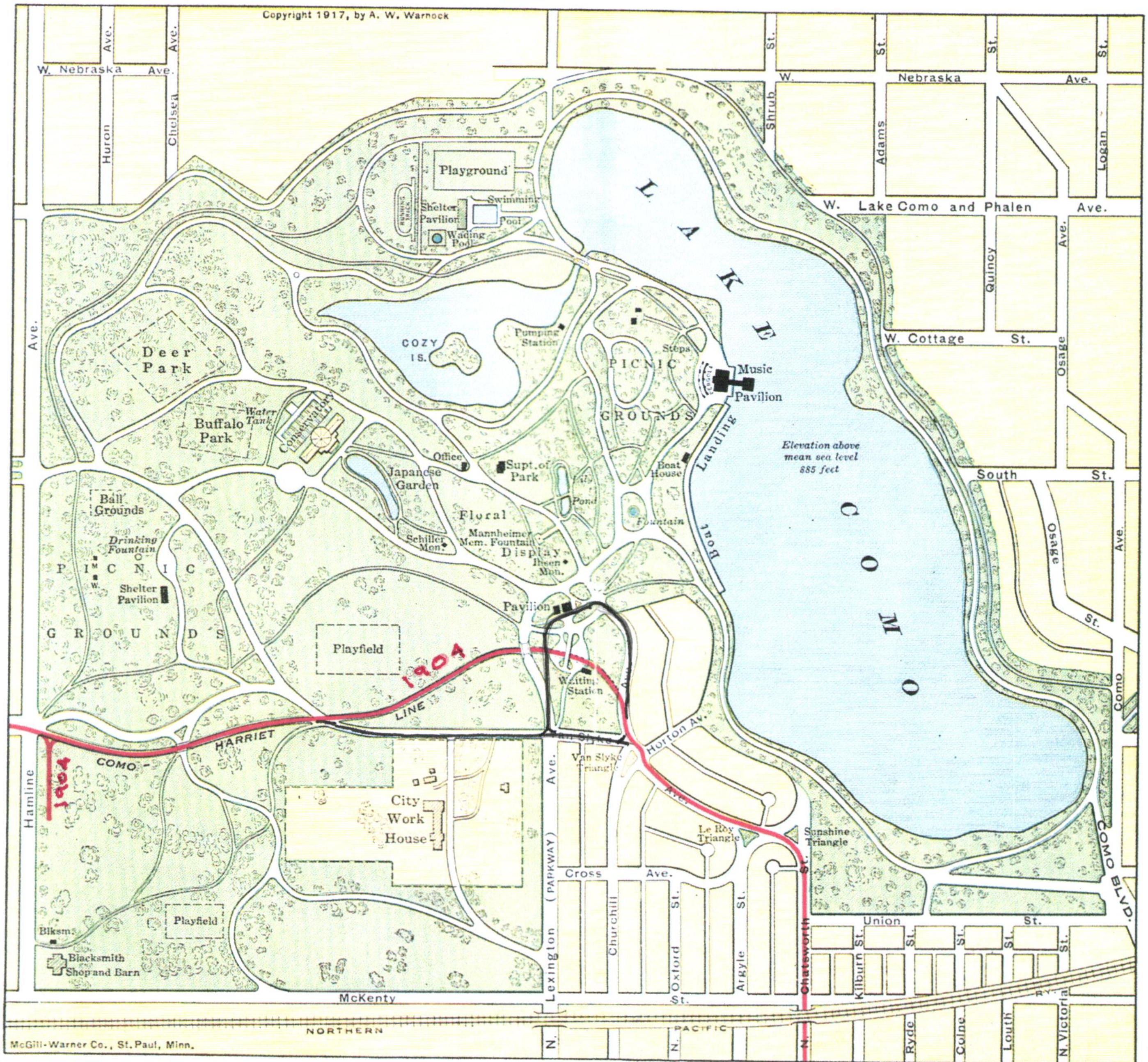
Congratulations are due the Twin City Rapid Transit company for its enterprise in establishing this new interurban service. It is somewhat of a speculative enterprise at that. While the old line was congested to a large extent it could have been made to do all the business for years to come, and there would have been no danger of any competing line entering the field. The company has simply established another line, trusting to the advantages it offers and to the building up of the territory along its route for the patronage which will make it profitable. If the line is profitable it will mean that Minneapolis is growing as a city.

The cost of building and equipping the new line was close to $200,000.



ON THE NEW INTERURBAN LINE.

COMO PARK AND LAKE COMO, SAINT PAUL


Copyright 1917, by A. W. Warnock
W. Nebraska Ave.
Huron Ave.
Chelsea Ave.
Hamline Ave.
Playground
Running Track
Shelter Pavilion
Swimming Pool
Wading Pool
LAKE COMO
Shrub St.
Adams St.
Logan St.
W. Lake Como and Phalen Ave.
Quincy Ave.
W. Cottage St.
Osage St.
South St.
Cozy Is.
Pumping Station
Steps
Music Pavilion
PICNIC GROUNDS
Deer Park
Buffalo Park
Water Tank
Conservatory
Office
Japanese Garden
Supt. of Park
Pond
Boat House
Boat Landing
Fountain
Elevation above mean sea level 885 feet
Ball Grounds
Drinking Fountain
Schiller Mon.
Mannheimer Mem. Fountain
Floral Display
Ibsen Mon.
Shelter Pavilion
PICNIC GROUNDS
Pavilion
Playfield
1904
COMO - HARRIET LINE
Waiting Station
Van Slyke Triangle
Horton Av.
City Work House
Le Roy Triangle
Sunshine Triangle
Como Ave.
COMO BLVD.
Cross Ave.
Lexington (Parkway) Ave.
Churchill St.
Oxford St.
Argyle St.
Chatsworth St.
Union St.
Kilburn St.
Ryde St.
Colne St.
Louth St.
N. Victoria St.
Playfield
Blksm.
Blacksmith Shop and Barn
McKenty St.
NORTHERN PACIFIC RY.
McGill-Warner Co., St. Paul, Minn.

New maps of the two most beautiful parks in the beautiful Twin Cities
—Minnehaha Falls in Minneapolis and Como Park in St. Paul

→ 1892 & 1898

Office DEPOT.

Minneapolis Tribune (1867-1908); Jul 2, 1898;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 5

STARTED ON TIME

NEW COMO INTERURBAN CARS PUT IN OPERATION.

Twin City Rapid Transit Company Promised to Inaugurate the Service July 1, and It Kept Its Word—The New Route the Most Picturesque in the Twin Cities—Officers of the Company, With Invited Guests, Make the Initial Trip—Business on the New Line Commences at Once.

The new Como interurban service of the Twin City Rapid Transit Company is now opened, and the traveler between the two cities may take his choice of routes. The officers of the company had promised that the service would be inaugurated July 1, and they kept their word. There is a little work yet to do in the way of adjusting trolleys and ballasting tracks, but the line is open for business, and is getting plenty of it.

The first car to make the trip from Minneapolis to St. Paul started from Washington and First avenues south at 2 o'clock yesterday afternoon. It was car No. 738, one of the new summer and winter cars built by the company expressly for the new interurban line. Every window was "stowed," so to speak, and the car was as open to the cool breezes as one of the regulation open cars. The leather upholstering looked invitingly clean and comfortable, and in every respect the cars are what the company claims for them, the finest ever put into service on a street railway line. Not all the cars are finished in leather, however; some are finished in serviceable and equally sanitary cane.

The car was under the immediate care of H. C. Kuchenbecker, general instructor of the company; W. J. Alexander acted as conductor, and Thomas Hartin handled the motor. Among the gentlemen who made up the party which made the initial trip were Thomas Lowry, president of the company; C. C. Goodrich, vice-president; Willard J. Hield, general manager; George R. Folds, amusement manager of the company; C. F. Holmes, general manager of the Metropolitan Traction Company of Kansas City; D. B. Dean, of the street railway service, Chicago; R. J. Mendenhall, and G. C. Hartley, of the Duluth Street Railway Company; Judge M. B. Koon, F. G. James, secretary of the Minneapolis Improvement Company; City Attorney Frank Healey, ex-County Attorney Frank M. Nye, W. J. Murphy, and others.

The run to Como Park was without accident or special incident. The track was unusually smooth for new work, and the car rolled along as gently as it might over the oldest and best ballasted section in either city. The long and heavy rails are accountable for the excellence of the roadbed on this, the opening day.

At Como the car was run around the circle which all the cars on their eastern trip will make. It was stopped at the pavilion, while the party, in company with a car load of members of the St. Paul Commercial Club, who were making a trip over the line as guests of Supt. D. S. Smith, went over to the lake to investigate the refreshment stand.

After half an hour spent in the park the St. Paul party resumed the journey to Minneapolis, and the Minneapolis car proceeded to St. Paul. The tracks were not reserved for the special cars by any means. As soon as the special car had left Minneapolis on its outward trip the regular cars began running on schedule time, and the car with the president and other officials of the road had to take its place in the procession of cars which were circling the new route. On the return trip at many places along the line were men and women waiting to go somewhere on the new interurban, and the second car over the line had a goodly load of passengers. Business began as soon as the cars began to run.

The company is preparing to take care of the crowds which are expected to visit Como Park. The loop has been improved in many details, and as was said above, all the cars on the trip to St. Paul will make a complete circuit of the loop; on the trip from St. Paul to Minneapolis they will go around three sides of the loop, giving the passengers from either direction a chance to alight at the nearest point to the lake and the pleasure grounds. The company has erected a large and handsome waiting room and pavilion at the higest point on the loop, and has floored a large space between the pavilion and the track. There will be plenty of shelter in case of stormy weather.

The new cars will be run on a 15-minute schedule for the present. The Como Interurbans may be told from the old line cars by the illuminated lettering in the end which is "Como Int.," and by the side signs which read "Como Interurban Harriet." Cars with that lettering will run from Lake Harriet to St. Paul, returning to Lake Harriet. Besides these cars will be the "Como Int." short cars, which will be run as the demands of business warrants. These cars will circle the loop in this city the same as the cars of the other interurban. All the cars of the new interurban line will use the East Side barns, not the West barns, as the Lake Harriet cars have been doing. In a few days all these slight changes will be learned by heart, and there will be no occasion for misunderstandings or disappointments.

The prettiest and most satisfactory ride in the two cities will be by the new interurban line.

IS AN IMPORTANT AND BIG UNDERTAKING
Minneapolis Tribune (1867-1908); Apr 10, 1900;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 8

IS AN IMPORTANT AND BIG UNDERTAKING

Twin City Rapid Transit Company Will Make Substantial Improvements to Its System in the Vicinity of Lake Harriet.

Work on the new bridge and the lowering of the street car tracks at Lake Harriet will be commenced this morning. The foundation to the new bridge, which is about 100 feet north of the old one, was placed last fall. This structure will cost $6,900. The bridge is so located that the new roadway leading to it will overcome the steep hill at Interlachen.

The Twin City Rapid Transit Co. will lower its tracks at this point four feet, and this work will be completed in a month.

The street railway company is to grade its tracks from Hennepin avenue to Lake Harriet, and in connection with the improvements at Lake Harriet, the service between Hennepin avenue and the lake will be practically suspended for about 30 days.

The Lake Harriet cars will run as far as Thirty-first street and Hennepin avenue, one track will be kept from Hennepin avenue to Lakewood cemetery, and a small car will be run on it to accommodate visitors to the cemetery and residents of the Lake Harriet district, but there will be no service beyond the cemetery.

A very important improvement at Lake Harriet will be the new station. This will be something novel for this part of the country. It will be just opposite from the one in use the past few years. Instead of the passengers going up and over the tracks a stairway will lead them under them.

It is estimated that all the work at this point of the park system will be completed by the middle of May.

CHANGES AT THE LAKE
Minneapolis Tribune (1867-1908); May 4, 1900;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 5

CHANGES AT THE LAKE

Many Notable Improvements Being Made at Harriet to Meet the Needs and Desires of the People.

The Twin City Rapid Transit Company Is Working in Conjunction With Park Board in the Matter.

The improvements at Lake Harriet are being rushed with such energy that in all probability the season at this popular resort will be formally opened Sunday, May 13.

The Twin City Rapid Transit company commenced the lowering of its tracks from the cemetery to the lake three weeks ago, ~~and during this time has had between 150~~ and 200 men employed on the work.

The lowering of the tracks is to accommodate the park board. The board will make several changes in the driveway between Lake Calhoun and Lake Harriet. The course of the driveway will be about 100 feet north from the old road, and a new bridge will be built. This bridge will cost $6,900, and be of artistic proportions.

While the Twin City Rapid Transit company hopes to be able to accommodate its patrons in 10 days, the park drive will not be open to the public until June 1, at the earliest. The old bridge has been torn down, and those who wish to drive to the lake now are compelled to take the old road to the top of the hill, and then turn in to Cottagewood and make a roundabout trip.

TRACKS LOWERED SIX FEET.

The work that the street railway company is having done means a great improvement to the district, but it is being done at a great expense. The trackage is affected a distance of a mile, and is being lowered six feet.

At the lake terminal a great improvement will be made. The old station has been torn down, and will be replaced by a modern structure. The old building led the passengers up and over the tracks, but the new station will work just the opposite. The passengers will make their way from the cars to the lake front through a sub-way. The lay of the ground will not necessitate this being extended any considerable distance. The sub-way will be well lighted and of sufficient width to accommodate the passing to and fro of any number of people.

The company is also expending a considerable sum in repairing the pavilion at Lake Harriet. This year there is more to be done than in former years, and in consequence the improvement as a whole will be more marked.

The park board is having built a new boat dock 100 feet long. One was constructed a couple of years ago, but it is not fitted to the present demands. The old fence, near the pavilion, has also been torn down, and several other alterations made.

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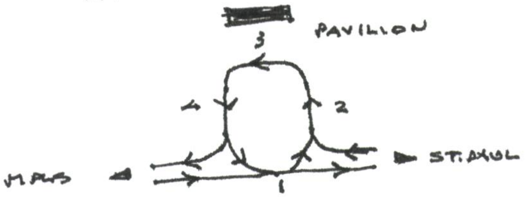
COMO PARK LOOP 1898
BASED ON NEWSPAPER ARTICLE



Como Park
Annual Reports of the Park Commissioners

Sixth Annual Report March 1, 1897

Authorized the track through the park, with stipulations.

(1) Build three bridges to avoid crossing any roadway.

(2) Provide 187 electric lights of 2,000 candlepower in the park and connecting parkways for 15 years.

(3) Pay $1,800 for the seating annex next to the pavilion.

(4) Construct a new shelter station at the railway entrance to the park at a cost of no less than $2,000.
(This amount was set because SPCR owed the City of St.Paul this same amount on the previous lease of the land occupied by the loop track.)

(5) A three-year agreement to operate refreshment privileges (previously privately owned); in return SPCR would pay for music and entertainment in the park at a cost of $3,500 per season.

(6) Remove the track on Lexington Ave. which had formed part of the loop. ???

Eleventh Annual Report YE 12-31-1901

It was noted that four acres were added to the park consisting mainly of the block of land encircled by the street railway loop at the entrance of the park, acquired under a contract with SPCR whereby, in consideration of the privilege granted to them of changing the location and character of their tracks into Como Park from a single track loop around the block to a double track through it, they have agreed to pay the purchase price of this block and cause it to be conveyed to the city for park purposes.

Twelfth Annual Report YE 12-31-1902

SPCR accepted a resolution of the park board of December 29, 1902, to change the single track loop in the park to double track through Block 2 Warrendale [Addition], the real estate on which the loop track was located. on the condition that SPCR purchase Block 2 and convey it to the City as an addition to Como Park.

(The SPCR real estate record book listed purchase of Como property in St.Paul during February 1902 for $8,250.)

An additional financial obligation required SPCR to contribute $3,000 toward the erection of a new park station. (1901?)

Thirteenth Annual Report YE 12-31-1903

SPCR will change the single track loop in the park to double track through Block 2. Preparations are underway to build a handsome stone structure with tracks going under it at the east entrance to the park.

1905-1906

In 1905 the City of St.Paul built a waiting station south of the right-of-way and east of the two bridges. In 1906 the City of St.Paul built a pavilion north of the right-of-way. The 1905 annual report reported a settlement between the City and SPCR which involved a $30,000 payment by SPCR to the City, a much needed windfall lfor building the new pavilion. The park superintendent reported that SPCR furnished the money for the new waiting stationl.

1899
MINNEAPOLIS

On	From	To	Date Completed
	Single Track built:		
8th St. S.E.	Central Ave. S.E.	14th Ave. S.E.	NOVEMBER 20TH
Lyndale Ave. N.	42nd Ave. N.	49th Ave. N.	DECEMBER 1ST

1900
MINNEAPOLIS

On	From	To	Date Completed
	Second Track added:		
Douglas Ave.	Knox Ave. S.	Penn Ave. S.	

1900
ST.PAUL

On	From	To	Date Completed
	Track abandoned:		
Randolph Ave.	W. 7th St.	Mississippi River Blvd.	
SNELLING AVE.	MINNEHAHA AVE.	UNIVERSITY AVE.	

1901
MINNEAPOLIS

On	From	To	Date Completed
	Second Track added:		
Nicollet Ave. S.	40th St.	42nd St.	
	Second Track abandoned:		
Laurel Ave.	Colfax Ave.	Irving Ave.	(.386 miles)

1901
St.PAUL

On	From	To	Date Completed
	Double Track built:		
Maryland Ave.	Greenbrier St.	Payne Ave.	
	Single track built:		
Cedar St.	7th St.	8th St.	(Cedar St. loop)

1902
MINNEAPOLIS

On	From	To	Date Completed
	Second Track added:		
Emerson Ave. N.	26th Ave. N.	29th Ave. N.	

1903
MINNEAPOLIS

On	From	To	Date Completed
	Second Track added:		
Penn Ave. S.	Douglas Ave.	21st St. W.	
Nicollet Ave. S.	42nd St.	46th St.	
Bryant Ave. S.	31st St. W.	40th St. W.	

The Lake Harriet Pavilion built in 1891 was destroyed by fire February 6th. After the fire it was deemed undesirable that a pavilion located on park property should be operated by others than the Minneapolis Park Board.

The $15,000 insurance proceeds received by MSR were donated to MPB for construction of a new pavilion. (The latter was completed in 1904 and destroyed by a windstorm in 1925.)

1903
St.Paul

A trust agreement covering an issue of mortgage bonds indicated whether the various lines were double track or single track, or a combination of both. The following information was extracted from the document.

1. South Robert St. was all single track from Concord St. to Annapolis St.
2. West 7th St. was double track to Parnell St. and single track from there to the Fort Snelling bridge.
3. Smith Ave. was single track from King St. to Annapolis St.
4. Stryker Ave. was all single track.
5 Rice St. was single track from Hatch St. to Maryland Ave. Records do not indicate when the second track was added; probably either 1906 or 1909 when track was extended northward.
6. The wording as to the Jackson St. line was difficult to interpret, but seemed to indicate that double track ended at 13th St. with single track from there to Maryland St. This agrees with the 1892 corporate minute book. Records are unclear as to when second track was added north of 13th St. Track construction projects on this portion of the line took place in 1903, 1906 and 1911.
7. Grand Ave. from Hamline Ave. to Cretin Ave. was single track.
8. Snelling Ave. from Taylor Ave. to Minnehaha Ave. was single track.
9. Minnehaha Ave. from Snelling Ave. to Hamline Ave. was single track.

However another company document dated January 1, 1901, stated that 8. and 9. were double track.

1904
MINNEAPOLIS

On	From	To	Date Completed
	Single Track built:		
8th Ave. S.	38th St.	46th St.	October 3rd
8th St. S.E.	Central Ave. S.E.	14th Ave. S.E.	

1904
St.PAUL

Track relocated from Wacouta St. to Sibley St. between 3rd St. and 5th St.
The Fairgrounds loops and storage tracks were built.
Second track added on W. 7th St. from Parnell Ave. to the Fort Snelling bridge.

As of December 31, 1901, it was reported that the company leased and operated a park at Lake Como. Real estate was purchased in the Park during February 1902. During 1904 a new loop track, bridge, concrete platform and walks, and a foot-bridge were built. A waiting station south of the right-of-way was completed in 1905, and a pavilion north of the right-of-way, in 1906, all by the City of St.Paul.

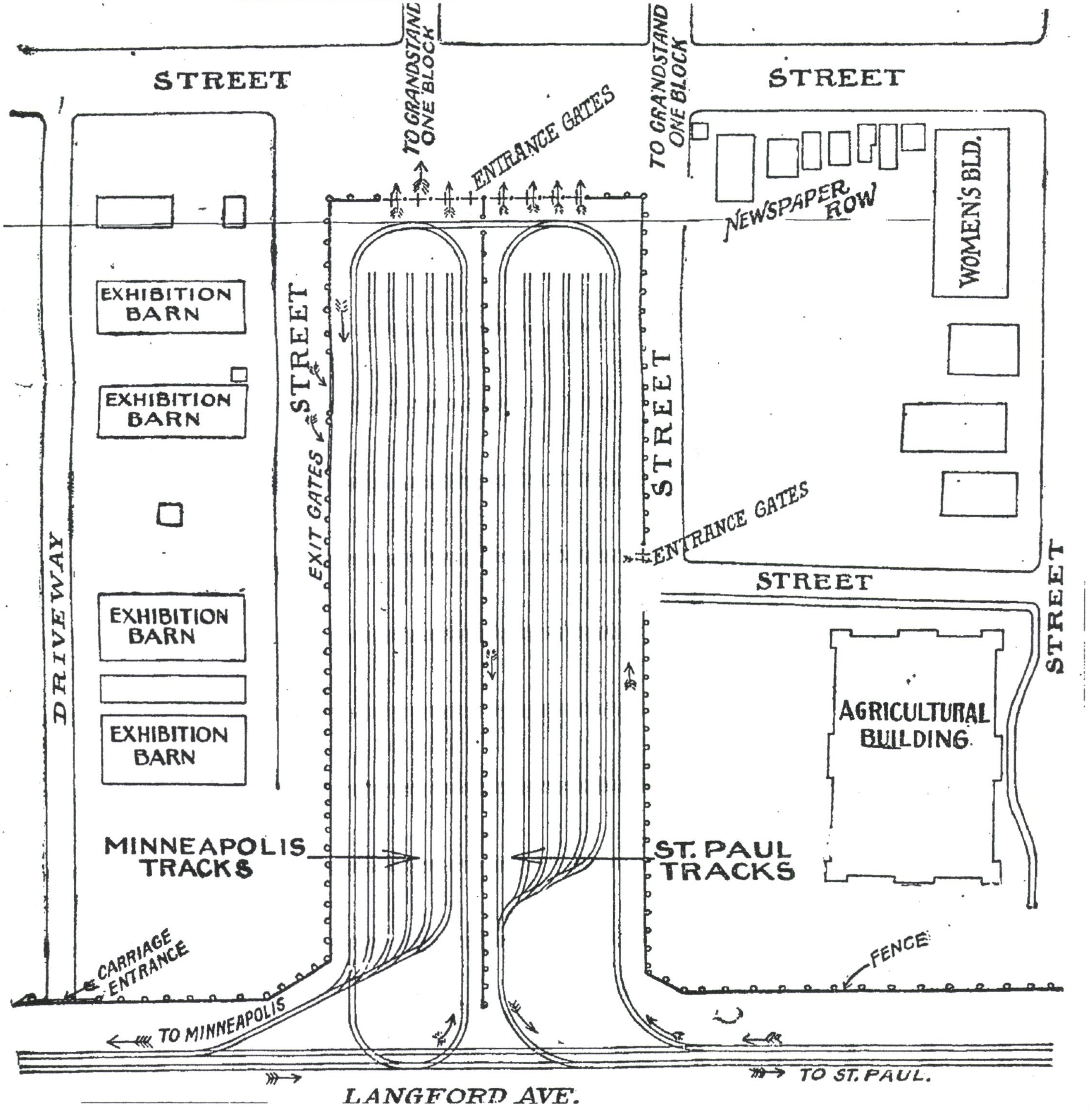
1905
MINNEAPOLIS

On	From	To	Date Completed
	Double Track built:		
Lake St.	Hennepin Ave.	31st Ave. S.	May 27th
Bloomington Ave.	32nd St. E.	34th St. E.	August 7th.
Right-of-Way	Minnehaha Falls	Fort Snelling loop	August 21st.

The construction cost records list two girder bridges purchased for the Fort Snelling

Minneapolis Tribune (1867-1908); Aug 7, 1904;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 2

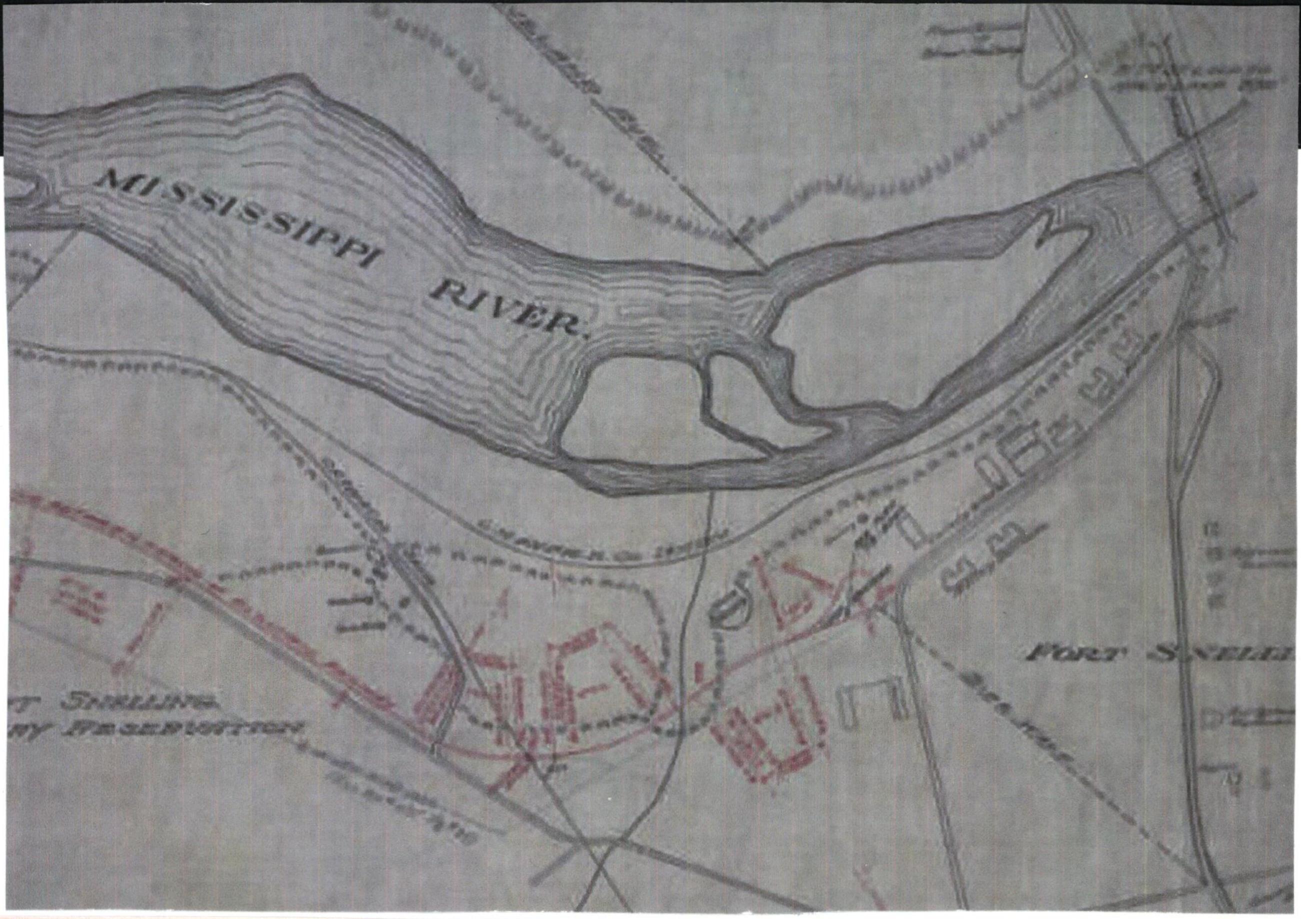
MAP SHOWING NEW STREET RAILWAY TERMINALS AT MINNESOTA STATE FAIR GROUNDS

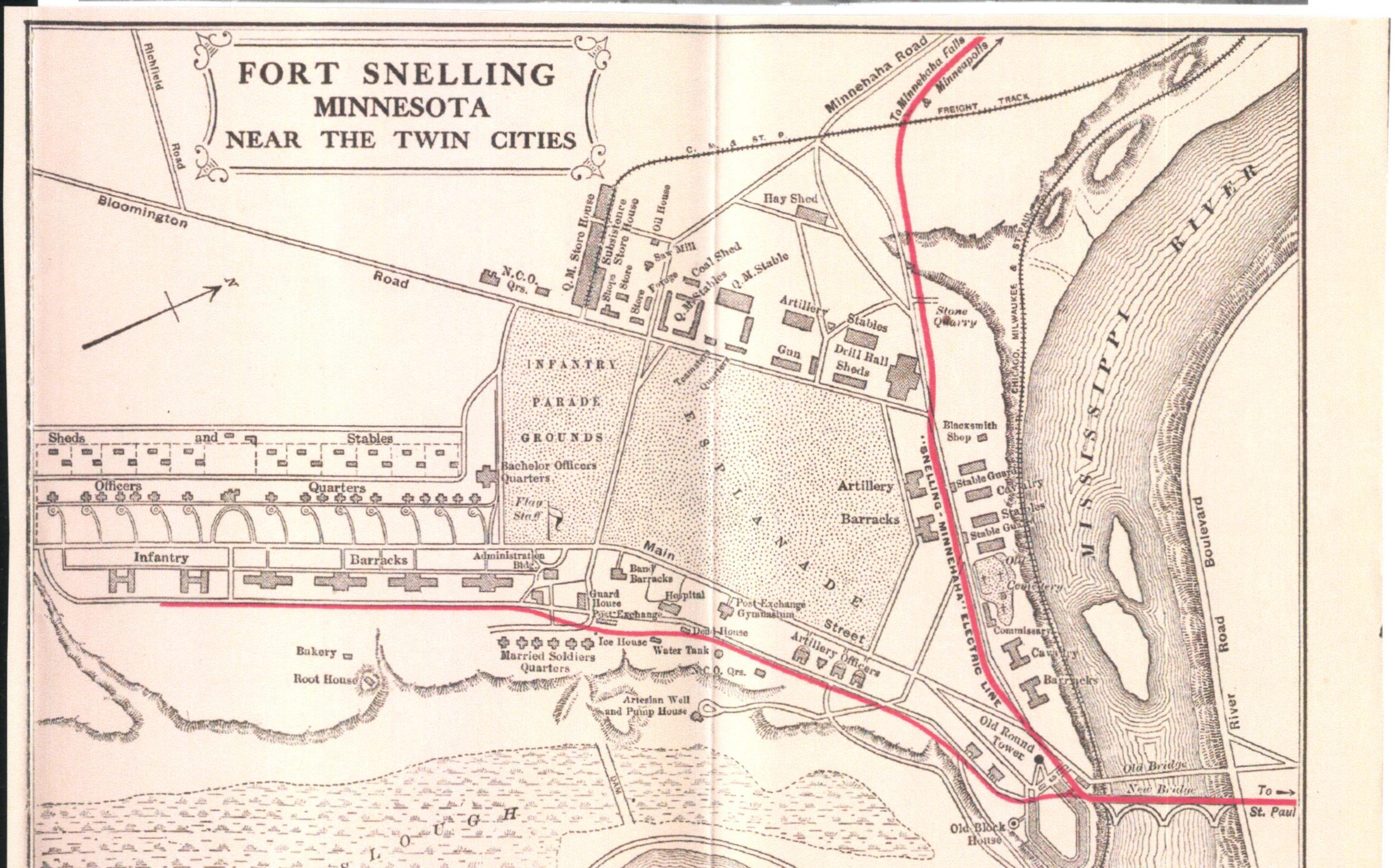

STREET
TO GRANDSTAND ONE BLOCK
TO GRANDSTAND ONE BLOCK
STREET
ENTRANCE GATES
NEWSPAPER ROW
WOMEN'S BLD.
EXHIBITION BARN
EXHIBITION BARN
EXHIBITION BARN
EXHIBITION BARN
STREET
EXIT GATES
STREET
ENTRANCE GATES
STREET
STREET
DRIVEWAY
AGRICULTURAL BUILDING
MINNEAPOLIS TRACKS
ST. PAUL TRACKS
CARRIAGE ENTRANCE
FENCE
TO MINNEAPOLIS
TO ST. PAUL.
LANGFORD AVE.

One of the most important improvements at the Minnesota state fair grounds this year is the new street railroad terminal station which is shown in the above diagram map. The new system of handling the state fair passenger traffic which is thus provided will make it possible for visitors to travel to and from the fair with perfect comfort. A system of loops and storage tracks is now being constructed at an enormous expense.

Operation of this system will be such that passengers will alight almost in the center of the fair grounds and within 200 yards of the grand stand. When leaving the grounds there will be found electric cars always standing ready and at the close of the afternoon and evening performances there will be about 150 cars waiting on the storage tracks, and with gates open so that they may be boarded at once, avoiding all pushing and crowding. This great supply of cars on the storage tracks will remove the possibility of discomfort when leaving the grounds.

The state fair will be held this year from Aug. 29 to Sept. 3.


MISSISSIPPI
RIVER.
FORT SNELLING
MILITARY RESERVATION
FORT SNELLI


FORT SNELLING
MINNESOTA
NEAR THE TWIN CITIES
Richfield Road
Bloomington Road
Minnehaha Road
To Minnehaha Falls & Minneapolis
FREIGHT TRACK
C. M. & ST. P.
Hay Shed
N.C.O. Qrs.
Q.M. Store House
Subsistence Store House
Oil House
Shops
Store
Saw Mill
Forage
Coal Shed
Q.M. Stables
Q.M. Stable
Artillery
Stables
Gun
Drill Hall
Sheds
Stone Quarry
CHICAGO, MILWAUKEE & ST. PAUL
INFANTRY
PARADE
GROUNDS
ESPLANADE
Sheds and Stables
Bachelor Officers Quarters
Officers Quarters
Flag Staff
Infantry Barracks
Administration Bldg.
Main Street
Band Barracks
Guard House
Post Exchange
Hospital
Post Exchange Gymnasium
Dead House
Ice House
Water Tank
Married Soldiers Quarters
N.C.O. Qrs.
Artillery Officers
Artillery Barracks
Blacksmith Shop
Stable Guard
Cavalry
Old Cemetery
Commissary
Cavalry Barracks
SNELLING-MINNEHAHA ELECTRIC LINE
Bakery
Root House
Artesian Well and Pump House
Old Round Tower
Old Bridge
New Bridge
To St. Paul
Boulevard
River Road
MISSISSIPPI RIVER
SLOUGH
Old Block House
To Mendota Ferry
MINNESOTA RIVER
PIKE ISLAND
N
THE MATTHEWS-NORTHRUP WORKS, BUFFALO, N.Y.

1911

extension. The loop at the Fort was located on the right-of-way north west of the Drill Hall (which later became the Theater) near what later became the junction of highways 55 and 100.

Track abandoned on 31st St. from Hennepin Ave. to 4th Ave. S. on September 15th.

Double track built on certain downtown streets to provide additional routings through the downtown area in order to relieve congestion on the High St. loop.

1st Ave. N. from Washington Ave. N. to 5th St. N.
5th St. S. from Hennepin Ave. to 4th Ave. S.
4th Ave. S. from 3rd St. S. to Washington Ave. S.
3rd St. N. from Hennepin Ave. to 1st Ave. N.
2nd Ave. S. from Washington Ave. to 6th St.

1905
St.PAUL

On	From	To	Date Completed
	Double Track built:		
Marshall St.	Prior Ave.	Lake St. bridge	May 27th
Maryland Ave.	Greenbrier St.	Forest St.	July 5th
Forest St.	Maryland Ave.	Phalen Park loop	July 5th
Concord St.	Witham St.	Annapolis St.	July 22nd
	Track built:		
Snelling Ave.	Minnehaha Ave.	Grand Ave.	September 2nd
Rondo Ave.	Miller St.	Chatsworth St.	November 23rd
	Single Track built:		
Concord St.	Annapolis St. (South St.Paul)	Linden St. (Inver Grove)	August 1st
	Double Track abandoned:		
Maryland Ave.	Greenbrier St.	Payne Ave.	July 5th

1906
MINNEAPOLIS

On	From	To	Date Completed
	Double Track built:		
1st Ave. N.	5th St. N.	6th St. N.	
6th St. N.	Hennepin Ave.	1st Ave. N.	
	Single Track built:		
1st Ave. N.	6th St. N.	7th St. N.	
40th Ave. N.E.	Central Ave. N.E.	5th St. N.E. (.663 miles)	NOVEMBER 14TH
	Second Track added:		
Nicollet Ave. S.	46th St.	50th St.	
Central Ave. N.E.	29TH AVE. N.E.	40TH AVE. N.E	

A crossover was installed 300 feet west of the Lake Harriet platform on the Harriet Right-of-Way, completed March 31st.

1906
MINNEAPOLIS-St.PAUL

The Lake St. bridge was reconstructed, reinforced to carry the weight of streetcars. In Minneapolis, double track was built on Lake St. from 31st Ave. S. to and on the Lake St. bridge to the city limits. In St.Paul double track was constructed on Marshall Ave. from the end of track and on the Lake St. bridge to connect with the newly-built Minneapolis track. Thus a third interurban between Minneapolis and St.Paul, the "Selby-Lake" line, was completed May 21st. In

Minneapolis the wye at 31st Ave. S. and Lake St. was relocated to 33rd Ave. S., completed August 25th.

1906
St.PAUL

On	From	To	Date Completed
	Double Track built:		
Thomas Ave.	Como Ave.	Hamline Ave.	June 29th
Hamline Ave.	Thomas Ave.	Minnehaha Ave.	June 29th
Minnehaha Ave.	Snelling Ave.	Prior Ave.	June 29th
Prior Ave.	Minnehaha Ave.	University Ave.	June 29th
	Track abandoned:		
Lexington Ave.	University Ave.	Minnehaha Ave.	June 29th
Minnehaha Ave.	Lexington Ave.	Hamline Ave.	June 29th
	Second Track added:		
Smith Ave.	King St.	Annapolis St.	
(1907 records mentions reconstruction of a wye at Smith Ave. and Sydney St.)			
Earl St.	Hastings Ave.	Mound St.	
	Track built:		
Randolph Ave.	W. 7th St.	Pascal St.	July 14th

At Langford Ave. (Como Ave.) gravel pit opposite the Fair Grounds loops.
Minnesota Transfer Railway connection at Prior Ave. and University Ave.
Stone crusher siding at W. 7th St. and Victoria St.
Track on Cedar St. and 8th St. was rebuilt March through August.

During 1905 a decision was made to tunnel through Selby Hill in order to reduce the grade and eliminate the slow counterweight system. The first construction on the new tunnel began October 10th, causing abandonment of the counterweight system. Temporary track was built on Farrington St. from Selby Ave. to Rondo Ave. so that "Selby-Lake" and "Merriam Park" cars could operate over Rondo Ave. track to downtown St.Paul and the 4th St.-Broadway loop. Temporary track was built on Smith Ave. and W. 3rd St., completed December 19th, so that cars used the Rondo Ave. track to Rice St. and College Ave., then this temporary track to W. 3rd St., and then over the regular route on W. 3rd St. to downtown St.Paul.

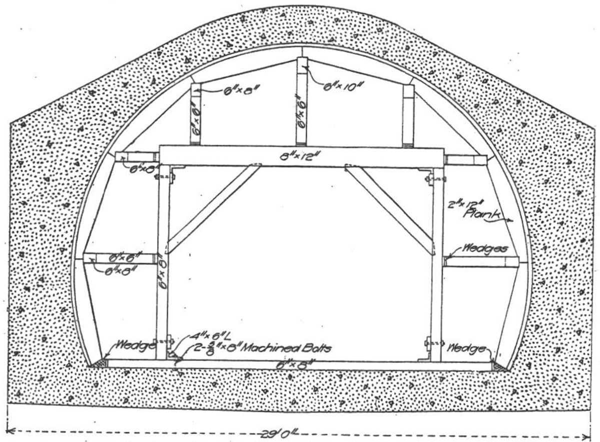
1907
MINNEAPOLIS

On	From	To	Date Completed
	Double Track built:		
Oak St. S.E.	Washington Ave. S.E.	Fulton St. S.E.	September 13th
Grand Ave. S.	Lake St. W.	40th St. W.	November 18th
Emerson Ave. N.	32nd Ave. N.	33rd Ave. N.	May 19th
33rd Ave.N.	Emerson Ave. N.	Fremont Ave. N.	May 19th
Fremont Ave. N.	33rd Ave. N.	36th Ave. N.	May 19th
	Single Track built:		
Fulton St. S.E.	Oak St. S.E.	Erie St. S.E.	September 13th
Erie St. S.E.	Fulton St. S.E.	Dartmouth Ave. S.E.	September 13th
Dartmouth Ave. S.E.	Erie St. S.E.	Superior St. S.E.	September 13th
	Second Track added:		
Emerson Ave. N.	29th Ave. N.	32nd Ave. N.	May 19th

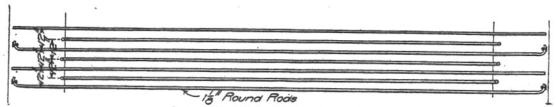
Track was relocated along Minnehaha Ave. between 48th St. E. and 52nd St. E. to side-of-the-road right-of-way.

THE SELBY HILL STREET RAILWAY TUNNEL, ST. PAUL MINN.

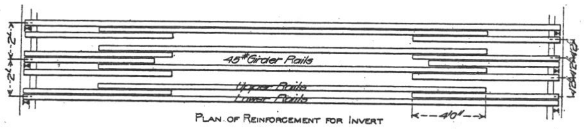
The Twin City Rapid Transit Company of St. Paul and Minneapolis has recently placed in service a subway which greatly reduces a steep grade on one of the most important street railway lines in St. Paul, and eliminates the necessity of a counterweight formerly used to handle cars up and down this grade. The new tunnel is on Selby Avenue, a short distance from the business district of the city. At the location of the tunnel the grade of the street was 16.5 per cent for several hundred feet, the business district being 125 ft. to 150 ft. lower than the residence sections at the top of this hill. The cars of one of the three interurban lines between Minneapolis and St. Paul, as well as local cars, were operated over this steep grade, on which the counterweight device had been used since electric traction was substituted in 1898 for the existing cable line on this street. The counterweight device consisted essentially of a traveling cable and a counterweight in a conduit below the street surface, and two grip cars, which were used to haul the street railway cars up and down the steep grade. The number of cars passing over this line became so great that the counterweight could not handle them fast enough to avoid delays. To eliminate the delays due to the auxiliary apparatus, and to obtain other operating advantages, the decision was made to build a double-track tunnel from the base of the hill to a point far enough back on Selby Avenue at the high level to obtain a satisfactory grade.



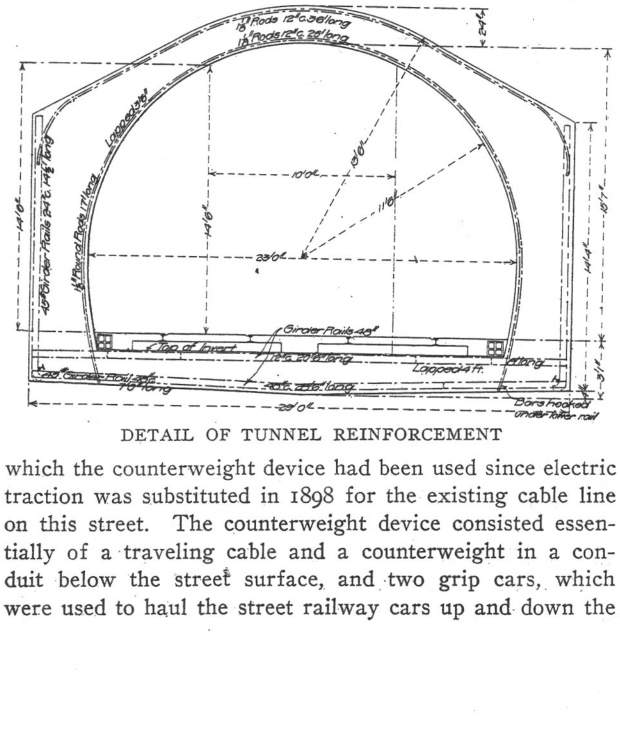
CROSS-SECTION OF TUNNEL AND TIMBER BENTS



PLAN OF REINFORCEMENT FOR ARCH RING



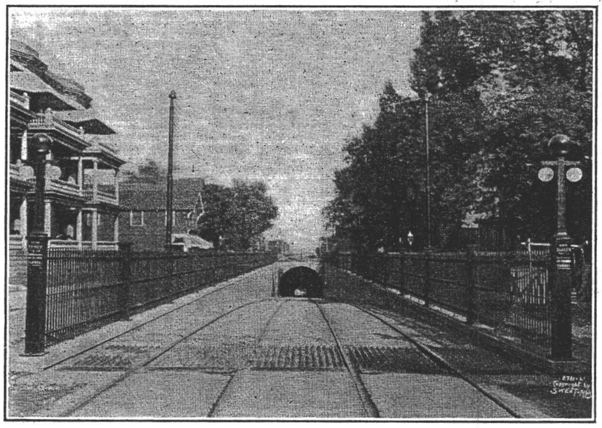
PLAN OF REINFORCEMENT FOR INVERT



DETAIL OF TUNNEL REINFORCEMENT

The total length of the improvement required in the grade reduction is 1700 ft., including the tunnel and the approaches. An approach, 230 ft. long, leads up to the portal of the tunnel at the bottom of the hill. The tunnel is 920 ft. long between portals and has an approach 320 ft. in length at the upper end. The lower approach is on a curve with a 500-ft. radius, but otherwise the alignment of the improvement is straight. The grade of the new track is uniformly 7 per cent, as compared with 16.5 per cent on the old track. The approaches are so arranged that after the backfilling has all been placed, the street will again be opened for traffic at practically the original grades.

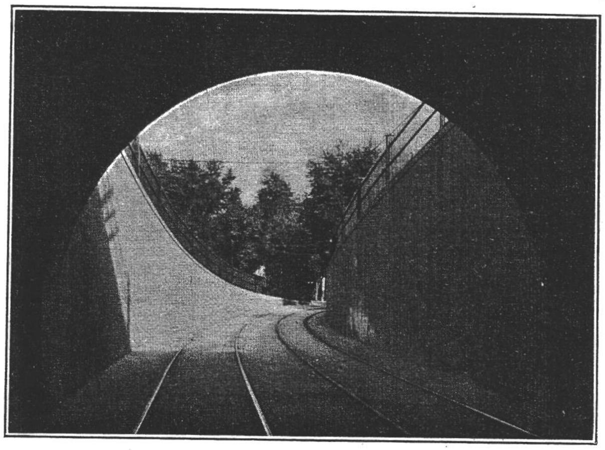
The approaches are between reinforced-concrete retaining walls, which vary from 3 ft. to a maximum of 20.5 ft. in height. Where these walls are less than 6 ft. high they are built as gravity-section structures. Above that height they are vertical, reinforced-concrete slabs, having a horizontal slab footing, and buttresses, 2 ft. wide and 6 ft. apart on centers, on the rear side. The approach to the lower portal of the tunnel is at one side of the street, a roadway parallel with it connecting with the street over the tunnel. The approach to the other end of the tunnel is at the middle of the street, but a 13-ft. drive was obtained on each side of it, so, on the whole, the street is much improved for highway traffic as compared with the old arrangement. The tops of the walls of the approaches and the portals of the tunnel are 0.5 ft. above the street grade, and are surmounted by a 6-ft. ornamental-iron picket fence, to prevent accidents.



ENTRANCE TO TUNNEL

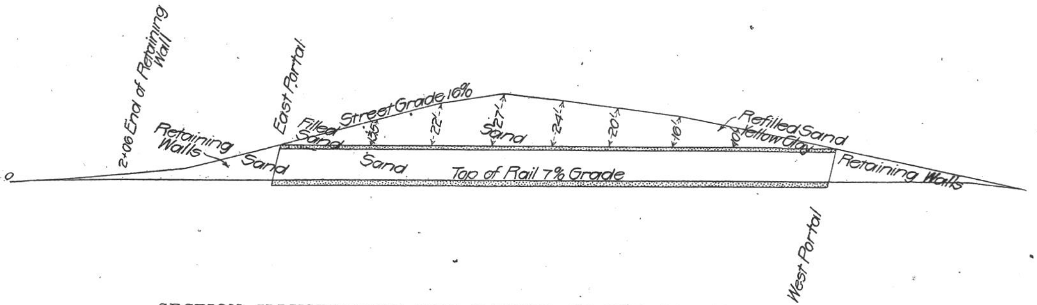
The tunnel has a double-centered arch, with a span of 23 ft. at the springing line and a rise of 11.5 ft. The clearance at the center line of both tracks is 14.5 ft., while the center height is 16 ft. 10 in. The arch is 24 in. thick at the crown, and the bench walls are 4 ft. thick. Unlike most tunnels of this type that have been built the invert is perfectly flat, having a thickness of 2 ft., exclusive of the concrete in which the track structure is imbedded. The tunnel section proper required 9.782 cu. yds. of concrete per linear foot.

The details of the reinforcement of the tunnel section are shown in an accompanying illustration. The arch has two sets of 1⅛-in. round rods, alternating with girder rails, all of which are spaced as shown. The rods in the side walls have their lower ends imbedded in the invert, and extend up into the arch, overlapping those in the latter to produce continuous reinforcement. The invert is reinforced with two layers of old rails, placed transversely. The rails in the lower layer are 28.5 ft. long and are placed 4 ft. apart on centers; those in the upper layer are 28 ft. long and are 12 in. apart on centers, their tops being 1 in. below the surface of the invert section.


VIEW SHOWING THE RETAINING WALLS

The tracks in the tunnel have 80-lb. T-rails attached to creosoted ties with screw spikes. The ties and rails are imbedded in concrete to within 1¼ in. of the top of the ball of the rail, the concrete being finished to a smooth surface to form the floor of the tunnel. The floor between the rails of each track is practically flat, transversely with the tunnel, and between the tracks is depressed only slightly toward the center line. Connections to a drain are made at intervals of 200 ft. in the tunnel so the floor can readily be flushed clean, thus avoiding any difficulty from dust, or odors from refuse that would collect in stone ballast. At the same time the track structure is believed to be of such design that the concrete in which it is embedded will not have to be disturbed for a long period.

A 15-in. sewer pipe was laid under the invert, along the center line of the tunnel, from the entrance of the upper approach to the lower end of the improvement. An opening covered with a grating is placed across the end of the upper approach to intercept storm water and divert it into this sewer. Similar openings at other points in the approaches and the tunnel provide inlets to the sewer for storm water and for water used in flushing. The ground water back of the tunnel and retaining walls is also drained into this sewer through 4-in. laterals, which are placed 20 ft. apart on both sides of the main drain.



SECTION ILLUSTRATING THE NATURE OF THE SOIL AND WORK DONE

A four-way duct for cables is imbedded in the concrete along each side of the tracks, manholes being provided on these ducts at both ends and at the middle of the tunnel. Connections between the trolley wires and the cables in the ducts are made through conduits imbedded in the tunnel arch. The tunnel is lighted by 32-candle power incandescent lamps, spaced 10 ft. apart along the center line of the arch. These lamps are also connected to the cables in the ducts through conduits buried in the tunnel arch.

The construction of the tunnel was handled entirely in an open cut, 34 ft. in width, the maximum depth of the cut being 52 ft., and the average about 30 ft. The hill through which the cut was made consists almost entirely of a coarse glacial sand, containing some boulders and small stone. As the sand was practically free from clay, it would flow easily when dry. When the street was originally graded it was cut down 15 ft. to 25 ft. below the natural surface on one side for 250 ft. toward the lower portal of the tunnel. A heavy masonry retaining wall had been built along that side of the street to hold back the ground, which continues to rise until a surcharge of from 10 ft. to 30 ft. over the wall is produced within a short distance back from the street.

The cut had to be closely sheeted and heavily shored from end to end, owing to the nature of the sand through which it was made, and the necessity of protecting the adjacent property. The sheeting consisted of 4-in- x 6-in. timbers in 22-ft. and 26-ft. lengths. Against this sheeting were placed horizontally 12-in. x 12-in. waling, or ledger timbers, spaced 6 ft. apart on centers. The waling timbers in the corresponding rows were braced across the cut by poles, 10 in to 14 in. in diameter, and 35 ft. long. The cross braces were spaced 6 ft. apart along the waling timbers, thus making a brace at each corner of every 6-ft. square on the side of the cut. The sheeting was driven by hand in advance of the excavation to a depth of from 8 ft. to 26 ft., and when the excavation had reached that depth, a second set of sheeting was started inside the lowest waling timber for the first set, and was driven to the bottom of the cut. The bracing timbers were wedged in place as the excavation was made, light vertical braces being nailed to them near the middle to prevent sagging.

The 6-in. x 6-in. sheeting was replaced for 250 ft. along the base of the high retaining wall by heavy round piles, 26 ft. to 46 ft. long, which were driven closely together. Since the edge of the cut had to be made close to the base of the wall these piles were driven within 18 in. of the latter. As the excavation was made in this section of the trench the row of piles were braced against the sheeting on the opposite side with the regular heavy poles. Inclined braces, with one end against the sheeting on the opposite side of the trench, were also placed against the wall at various points. After the sheeting and bracing had been built up in this manner, the braces being placed as the excavation was made, the tunnel was built and the backfilling placed on it without injuring the high retaining wall or adjacent property in any way.

The great pressures brought on the sides of the cut by the loose sand precluded any possibility of removing the bracing or sheeting as the concrete work progressed, without the load on each brace being transferred to another support capable of carrying this load. A system for building the tunnel section was developed, however, which not only provided for the transfer of the loading on the temporary braces, but also greatly simplified the centering for the tunnel arch. As soon as a section of the excavation was made ready for the concrete, the invert of the tunnel was laid nearly to the tops of the upper layer of reinforcement rails in it. Heavy concrete posts 4 ft. x 4 ft. in cross-section, and reinforced with old steel rails, were built against the sheeting on both sides of the trench at the same time the concrete was placed in the invert. These posts were placed between the vertical rows of temporary braces and were 6 ft. apart on centers, a section of the two lower 12-in. x 12-in. waling timbers, 4 ft. long, being embedded in each of the posts. The posts were cast in rough plank forms, and were built enough in advance of the first work on the side walls of the tunnel to permit them to set for several days. They were held at the bottom by the invert and at the top by a temporary timber cross brace between the two corresponding posts on opposite sides of the trench.

Timber bents were then erected on the invert in such position as to form a center for the forms of the walls and the arch of the tunnel. These bents were 12 ft. wide and 11 ft. high. They were built with a 6-in. x 8-in. sill, two 6-in. x 8-in. plumb posts and an 8-in. x 12-in. cross brace at the top. The bents were spaced 6 ft. apart on centers, being directly opposite the vertical 4-ft. x 4-ft. concrete posts. When they had been erected as far as the side walls were to be built at that operation, the lowest row of temporary sheeting cross braces between them were removed one at a time, transferring the load on the bottom of the sheeting to the concrete posts. The inside forms for the walls up to the springing lines of the arch, 5 ft. above the invert, could then be set and braced at the top and bottom against the bents of the centering, the sheeting of the trench forming the outside forms. After these wall forms had been filled, enclosing the lower ends of the concrete posts, the concrete in them was allowed to set for a few days. The cross braces between the second row of walings from the bottom were then removed, the load on the sheeting carried by these braces being transferred to the concrete posts. The arch forms were next erected on the bents of the centering up to a height of 11 ft., or just under the third row of temporary cross braces, and the walls built up to that height. When this concrete had set, the third row from the bottom of the temporary cross braces between the sides of the sheeting, and also the temporary braces between the tops of the concrete posts, could be removed and the balance of the arch built.

In all this sequence of operations no part of the sheeting was at any time unsupported. At the same time the centering and forms for the concrete were erected practically without interference and the concrete could readily be placed. The temporary braces were also all saved, although the waling timbers and sheeting had to be left in place, which would have been required in any case. On the other comparatively little extra work, or extra concrete was required by extending the limits of the walls to permit the construction of the 4-ft. x 4-ft. concrete posts which temporarily carried the load against the sheeting.

The forms for the tunnel had ribs made of 2-in. x 12-in. plank cut to a template to conform with the curve of the arch. These ribs were each in six sections, a section on each side extending up to the 5-ft. level of the walls, a second section on each side extending to the 11-ft. height, and two top sections in the closing part of the arch. They were spaced 2 ft. apart on centers and were lagged with 2-in. x 4-in. timbers. Ordinarily the forms were permitted to remain in place at least 14 days before the centering was removed. The exposed surface of the concrete was all spaded carefully in the forms, with the result that a very uniformly good finish was secured.

The concrete work on the tunnel was carried forward in sections of various lengths, depending on the manner in which the excavation could be prepared. Backfilling was not placed on the arch until the concrete was at least 10 days old. The material from the unfinished sections of the trench was generally piled on the finished concrete work by cableways. The excavation was planned so very little of the material had to be handled twice, the back-filling being carried forward from both ends toward the middle of the tunnel.

The tunnel was designed by the engineering department of the Twin City Rapid Transit Company, of which George L. Wilson is engineer, and was built under the direction of that department by George J. Grant, general contractor of St. Paul. Charles R. Shepley was engineer in charge of the design and construction for the company. Prof. F. H. Constant, professor of structural engineering, University of Minnesota, assisted in the design.

EXTENSION OF TIME IN CHICAGO

The judges of the United States Court of Appeals have denied the motion of the Union Traction interests that the decision of Saturday be so amended as to permit the Chicago Railways Company to take over the property and accept the ordinance allowing it to operate them. The court went further and said nothing could be done legally to relieve the situation.

In view of this the company applied to the Council for an extension of time in the matter of accepting the new franchise grant to the Chicago Railways Company, and the Council consented to fix the date at Feb. 1. Before doing so, however, the condition was imposed that all revenue of the company, after operating expenses had been deducted, should be spent in bettering the service. Interests familiar with the company's affairs say that a judgment will be defaulted and the property sold. In this event the bidders would be the Chicago Railways Company and the Chicago City Railway Company. This is considered a somewhat drastic way of proceeding, but it is agreed that it would terminate the long series of distressing circumstances attending the company's operation and its effort to secure the new grants.

NEW ORLEANS RAILWAY CLOSES SUCCESSFUL PARK SEASON AT LAKE PONTCHARTRAIN

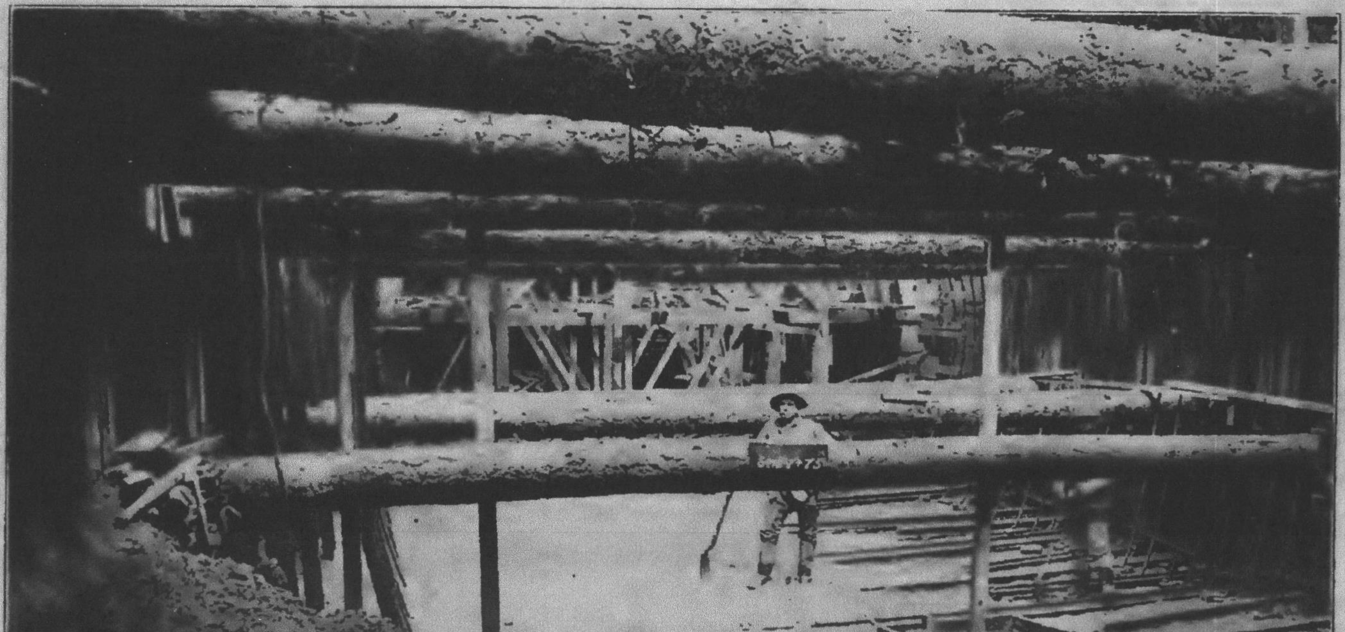
The season at West End, the summer resort on Lake Pontchartrain, operated by the New Orleans Railway & Light Company as an amusement park and general resort, closed Sunday, Sept. 14, and was pronounced by the management as one of the most successful in the history of the place. Nothing definite has been decided on the plans for next season, the matter of the lease being still in abeyance.

THE SELBY HILL TUNNEL OF THE TWIN CITY RAPID TRANSIT COMPANY.

The Twin City Rapid Transit Company, operating street and interurban car lines in and between the cities of St. Paul and Minneapolis, Minn., has recently placed in service a concrete subway which greatly reduces the grade and enables the company to give better and more frequent service on several of the more important urban lines and the Selby-Lake interurban line. This line with many others in St. Paul was originally operated by cables but when electricity was substituted in 1898 it was found that the electric cars could not climb the 16½ per cent grade which existed on Selby Hill. A counterweight system was then devised, which consisted essentially of a cable and counterweight in a conduit beneath the street surface and grip cars which were used to draw the cars over the grade. A description of this counterweight device appeared in the Street Railway Review of May 15, 1898. This method was found to be unsatisfactory when the traffic increased, because it was impossible to avoid delays in the operation of the counterweight system. In March, 1905, the company obtained certain concessions

Selby Hill Tunnel—Retaining Walls Extending from West Portal.

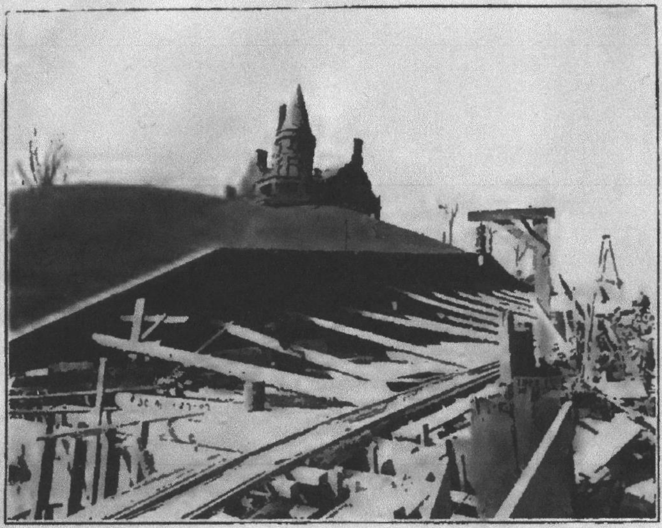
Selby Hill Tunnel—Selby Hill Before the Improvement.



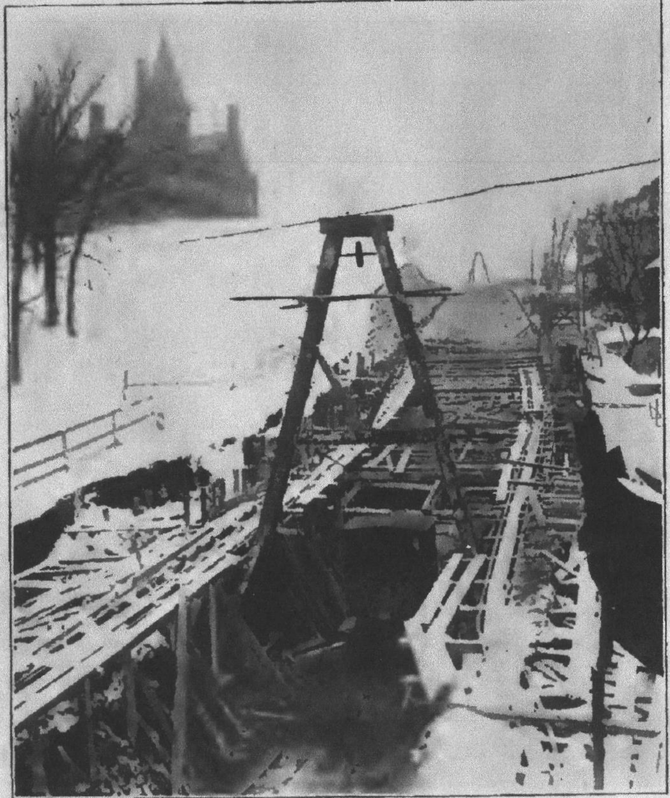
Selby Hill Tunnel—Sheeting, Waling Timbers and Cross Struts in the Trench.

from the city of St. Paul in settlement of some long-standing disputes and at the same time agreed to construct the subway in the interest of better service.

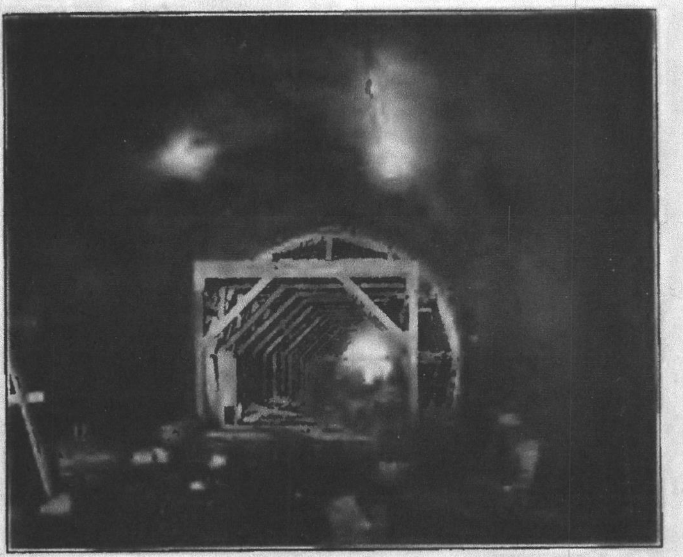
In order to reduce the grade a point was chosen some distance past the summit of the original grade at which the west or upper end of the improvement was to begin, the lower end being at the intersection of Selby avenue and Third street at which the old grade began. The summit of the old grade now lies almost directly over the center of the tunnel about 50 feet above the invert. The total length of the improvement is 1,700 feet, while the length of the subway from end to end of masonry walls is 1,179 feet. Of this distance 244 feet is between retaining walls forming the east or lower approach, 920 feet is the arch covered section or tunnel and 315 feet is between retaining walls forming the west or upper approach. The grade of the tracks in the improvement is uniformly 7 per cent and the alignment is straight except where Selby avenue turns into Third street at the east approach. Here an 11-degree curve, having an intersection angle of 41 degrees 4 minutes, was used. When the work of construction was begun the traffic was removed entirely from the street and the cars were operated over a detour track built through Farrington avenue, Rondo street and Smith avenue, a distance of about ½ mile.



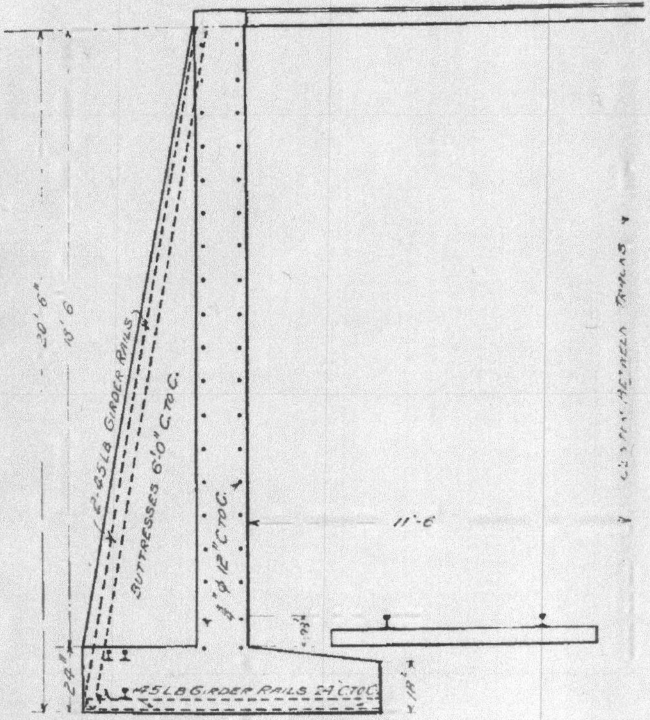
Selby Hill Tunnel—Falsework and Braces for Masonry Retaining Wall.



Selby Hill Tunnel—Falsework and Trolleys for Handling Concrete.



Selby Hill Tunnel—Interior of Tunnel, Showing Bents Supporting the Forms.

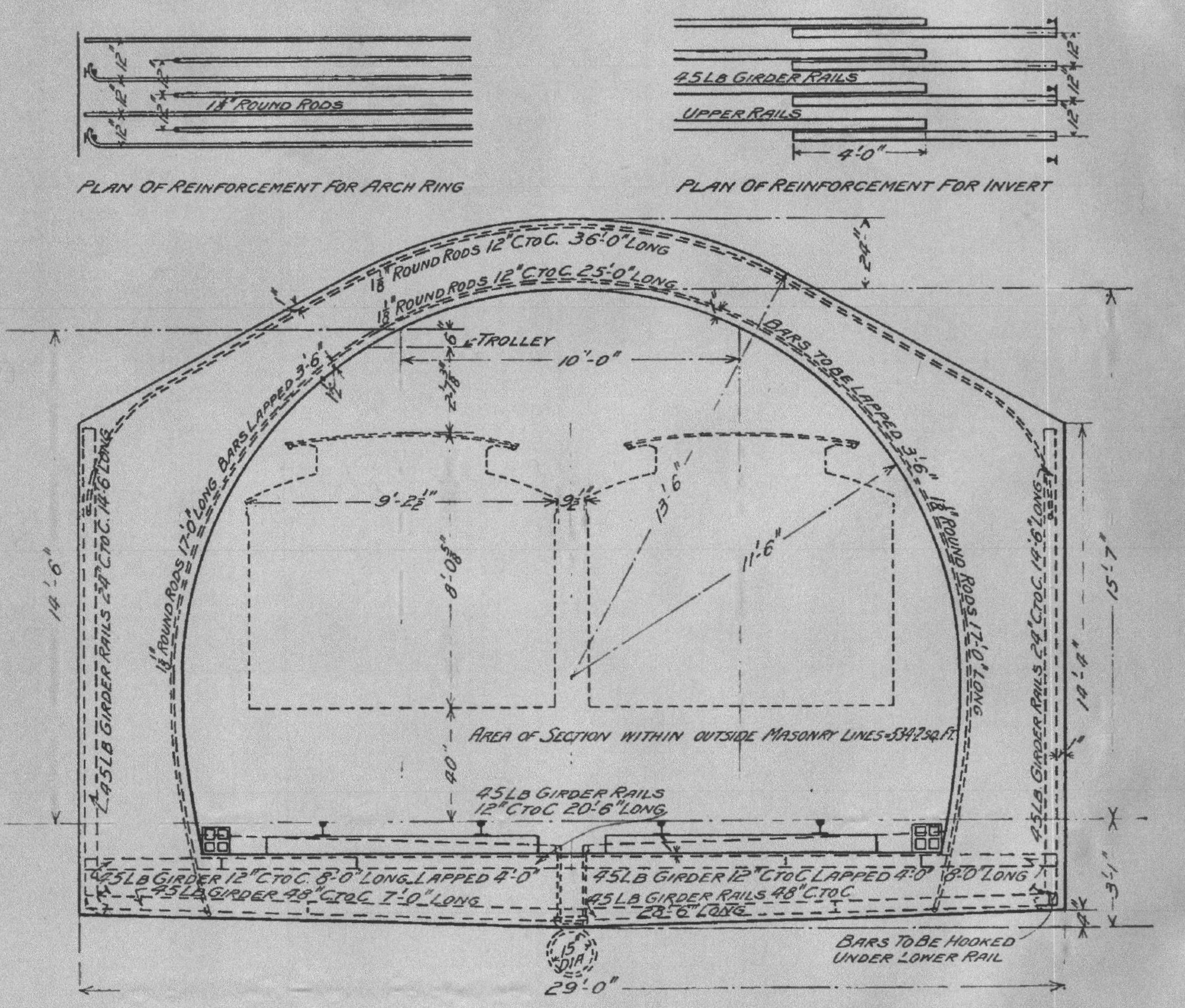


Selby Hill Tunnel—Cross Section of Retaining Wall.

Description of Subway.

The concrete retaining walls built along the approaches on either end vary in height from 3 feet to 20 feet 6 inches.

Under heights of 8 feet 7 inches these were designed as plain gravity walls, while above that height the walls were of rectangular section, supported on slab footings and reinforced in both wall and footing, as shown in one of the accompanying engravings. Buttresses 2 feet thick, spaced 6 feet center to center, were placed along the rear of the walls. The top of the retaining walls and parapet walls over the portals of the tunnel are ½ foot above the grade of the street and an iron picket fence 6 feet high is placed along the top of these walls to afford public protection. The covered portion of the subway is a circular arch with a diameter of 23 feet. The clearance allowed at the center of the tracks is 14 feet 6 inches and the total center height of the tunnel is 15 feet 9 inches. The invert of the tunnel is flat, being 26 inches thick at the center and 22 inches thick at its intersection with the side wall. This section is increased to 37 inches at the center and 33 inches at the side. It is reinforced along both the top and bottom surfaces with 45-pound girder rails. The bottom reinforcement, which is placed 1½ inches from the lower surface, consists of rails spaced 4 feet center to center. One rail 28 feet 6 inches long and two rails 7 feet long were used, the 7-foot rails practically doubling the reinforcement nearest the side walls. The reinforcement of the top of the invert consists of 45-pound girder rails 28 feet long and spaced 12 inches center to center. The side walls are reinforced along the outer surface with 45-pound girder rails 14½ feet long and spaced 24 inches center to center. These rails are bent under a longitudinal rail placed in the lower outer corners of the invert, as shown in accompanying engravings. The reinforcement along the interior surface of the side walls consists of 1⅛-inch round rods, spaced 12 inches center to center. This reinforcement extends around the entire intrados of the arch, a lap of 3 feet 6 inches being allowed at the splices. The outer surface of the arch ring is reinforced with 1⅛-inch round rods spaced 12 inches center to center. The interior surface of both the arch ring and the invert was carefully pointed after the removal of the forms, an excellent finish being obtained. In order to provide for the drainage of surface water a 15-inch drain pipe was placed below the center of the invert and drain connections provided at intervals along the tunnel. These drain connections consist of troughs extending across the floor and covered with iron gratings. The seepage water back of the walls is also drained into this central drain by means of 4-inch lateral pipes placed every 20 feet on each side of the tunnel. The central drain connects with the city sewer system. In the floor on each side of the subway is a tile conduit of four ducts for electric wires and cables. Connections are made from these ducts through conduits in the concrete to the trolley wires and electric lights. Openings into these ducts are provided at the ends and center


12"
12"
12"
12"
1⅛" ROUND RODS
PLAN OF REINFORCEMENT FOR ARCH RING
45 LB GIRDER RAILS
UPPER RAILS
4'-0"
12"
12"
12"
PLAN OF REINFORCEMENT FOR INVERT
1⅛" ROUND RODS 12" C TO C. 36'-0" LONG
1⅛" ROUND RODS 12" C TO C 25'-0" LONG
2'6"
TROLLEY
10'-0"
1⅛" ROUND RODS 17'-0" LONG BARS LAPPED 3'-6"
BARS TO BE LAPPED 3'-6"
1⅛" ROUND RODS 17'-0" LONG
9'-2½"
9½"
8'-0⅝"
13'-6"
11'-6"
14'-6"
15'-7"
14'-4"
AREA OF SECTION WITHIN OUTSIDE MASONRY LINES=534.2 SQ.FT.
4'0"
45 LB GIRDER RAILS 12" C TO C 20'-6" LONG
45 LB GIRDER RAILS 24" C TO C 14'-6" LONG
45 LB GIRDER RAILS 24" C TO C 14'-6" LONG
45 LB GIRDER 12" C TO C. 8'-0" LONG LAPPED 4'-0"
45 LB GIRDER 48" C TO C 7'-0" LONG
45 LB GIRDER 12" C TO C LAPPED 4'-0" 8'-0" LONG
45 LB GIRDER RAILS 48" C TO C 20'-6" LONG
15" DIA
BARS TO BE HOOKED UNDER LOWER RAIL
3'-1"
29'-0"

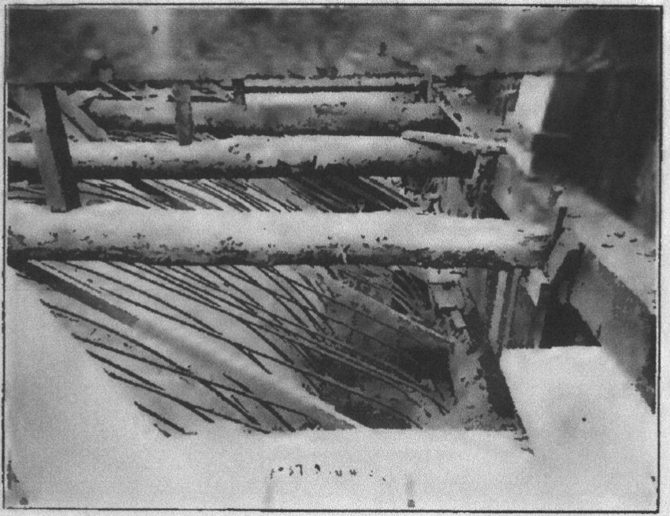
Selby Hill Tunnel—Cross Section of Tunnel and Plan of Reinforcement.

of the tunnel. The tunnel is lighted with 32-candlepower lights placed along the center of the arch at intervals of 10 feet Refuge bays or depressions about 10 inches by 2 feet by 6 feet in dimension are placed at intervals along the side walls on alternate sides of the tracks. Eighty-pound standard T-rails, laid upon creosoted oak ties, constitute the track structure. The rails are double-spiked with screw spikes throughout and the ties and rails are embedded in the concrete floor to within 2 inches of the top of the head of the rail.

At the east approach to the tunnel the character of the soil, which was found to be soft mud and peat, required the placing of 2 feet of concrete beneath the ties, which were also embedded in concrete in a similar manner to the track of the main tunnel. The retaining walls in this approach rest upon piling driven to a solid foundation.

Construction.

It was found desirable to construct the subway entirely in an open trench, and in order to accomplish the work in this manner it was necessary to do considerable sheeting. The material excavated was principally coarse sand containing a small percentage of rock and gravel. Sheeting timbers 4 by 6 inches, varying in length from 20 to 25 feet, were driven in advance of the excavation. As the trench was deepened waling pieces 12 by 12 inches were placed longitudinally across the sheeting timbers on both sides of the trench and transverse struts of rough timbers 12 to 14 inches in diameter were placed between these waling pieces to act as braces across the trench. The waling timbers were spaced at intervals of 6 feet along the sheeting and the transverse struts were placed at 6-foot intervals along the waling timbers. Where the trench was deeper than 25 feet a second row of sheeting was driven inside the first row. Along the south side at the deepest part of the work was a stone retaining wall rising about 12 feet above the original street surface. This retaining wall was almost directly above the south side wall of the tunnel and during the construction of this portion it was necessary to support the retaining wall by means of heavy timbers and struts, as shown in one of the accompanying illustrations. Heavier sheeting timbers were also used along this section of the trench.



Selby Hill Tunnel—Forms and Reinforcing Material for Crown of Arch.

Because of the heavy side pressures carried by the sheeting and struts and the character of the material it was impossible to remove the struts so that the side walls might be built without first transferring the side pressures to some reliable brace, and in order to overcome this difficulty a system of building the tunnel in longitudinal sections was devised by Charles R. Shepley, resident engineer, in charge of the construction. The scheme also simplified the difficulties of centering the arch. Coincident with the construction of the invert, concrete posts 4 by 4 feet, reinforced with 45-pound rails, were built against the sheeting at intervals of 6 feet. These concrete posts were located between the rows of cross struts, the lower waling pieces becoming embedded in the posts. These posts were built to a height of 11 feet and allowed to set for about a week until thoroughly hardened. Bracing timbers were placed between opposite posts across the trench.

Falsework for the forms of the side walls and arch of the tunnel was then built on top of the invert. This falsework consisted of a 6 by 8 inch sill, resting upon the surface of the invert, two vertical posts 6 by 8 inches and a cap 8 by 12 inches steadied by knee braces attached to the vertical posts. These bents supported the arch forms by means of posts or struts 6 by 6 inches, which in turn supported longitudinal stringers 6 by 8 inches. Upon these stringers rested the ribs bearing the form boards. These ribs were of planking 2 by 12 inches, cut to conform to the curve of the arch. The boards used for forms were 1-inch T. and G. dressed flooring. The ribs were spaced 2 feet apart and the bents 6 feet apart opposite the vertical posts. When the concrete in the posts had set the lower row of transverse struts or cross timbers was removed and the pressure on the sheeting transferred to the concrete posts. The inside forms for the side walls were then built to a height of 5 feet and the concrete placed to this height. The sheeting was used to make the outside forms. The walls then inclosed the lower end of the concrete posts. After this concrete had become satisfactorily hardened the second row of cross struts was removed and their load transferred to the concrete posts. The arch forms were placed in a similar manner as before and the arch completed to a height of 11 feet. When this second section had hardened the ribs and forms for the arch ring were placed and the arch was completed in the usual manner. The forms were kept in place at least two weeks before removing.

Two No. 2½ Smith concrete mixers were used, one being placed at either end of the trench. The concrete was carried to place by means of buckets handled by an overhead trolley system which was operated by machinery. The excavation required the removal of about 43,000 cubic yards of earth and 2,100 cubic yards of rock. The structure contains 10,300 cubic yards of concrete, in which about 12,000 barrels of cement were used, the composition being 1-3-5 for retaining walls, side walls and invert and 1-2-4 for the arch ring. Aggregate, which was of broken stone thoroughly screened, was required to pass a 2-inch ring. The steel rods used had an ultimate tensile strength of 55,000 to 65,000 pounds per square inch.

The work of repaving the street, putting in permanent gas mains and electric conduits and other changes which constitute city improvements amounted to about 30 per cent of the cost of the work. The trench during the construction was kept free from seepage water by means of a 6-inch centrifugal sewer pump.

The subway was designed and built under the direction of George L. Wilson, M. Am. Soc. C. E., engineer of the Twin City Rapid Transit Company. George J. Grant of St. Paul was the contractor and Charles R. Shepley resident engineer in charge of the construction. Work was commenced in November, 1906, and finished in August, 1907. The total cost of the improvement was $500,000.

The Illinois Traction System is making extensive preparations for handling the large traffic expected in connection with the coming state fair at Springfield, Ill. It is planned to use every available car and to run trains in sections, with two or more cars to a section.

During the Knox county fair at Vincennes, Ind., last week the street railway system of the Vincennes Traction & Light Company was taxed to the extent of its equipment to handle the crowds. On Thursday, September 19, the company handled 25,655 passengers in 13 cars, without an accident.

accident, the condition and position of the car, the cause of the accident, etc. Also to make a sketch showing the position of the trucks and car body. The form used in making this report is shown in the accompanying illustration. One copy is retained by the master mechanic, while another goes to the general superintendent.

SUBWAY IN ST. PAUL, MINN.

In 1887, when the first cable street railway was built in St. Paul, it extended from St. Paul's business district to St. Anthony hill, the most popular residence section, and as the cable system allowed almost any grade to be overcome, the most direct route was chosen via Fourth street and Selby avenue. To pass from the business district to the level of the Hill district required a grade of 16½ per cent between Pleasant avenue and Summit avenue. When the cable lines were electrified in 1898, the Selby hill grade being too steep for direct traction, a "counter-weight" was installed.

In March, 1905, the company decided to construct a tunnel that should do away with the counter-weight device and permit of more frequent car service. Plans for a tunnel with open approaches were prepared in 1906 and the construction of the subway and approaches let to George J. Grant of St. Paul.

Preliminary work of remodeling the various pipe systems on the street was begun in September, 1906. New sewers, water pipes, gas mains and electric conduits had to be provided for each side of the street, before the construction of the subway proper was commenced. The cars were removed on November 10th from the street and run around on temporary tracks, via Farrington avenue, Rondo street and Smith avenue.

From that date work was pushed vigorously day and night, except Sundays, until the arch and roadway construction was finished. It was considered best to allow 14 days for the concrete to set before operating through the tunnel and this time was required in finishing the items of conduits, paving and wiring about the work, and on August 10th—just nine months after its beginning, the subway was thrown open for travel.

Some interesting data regarding the work is as follows: The forces employed have averaged about 150 men. The length of the work is 1,700 ft., while the length of the subway from end to end of masonry walls is 1,479 ft. Of this distance, 559 ft. is between retaining walls, while 920 ft. is the arched and covered section. The grade of the tracks is a uniform seven per cent rate; the alignment straight, except the curve from Selby avenue into Third street, which has a radius of 500 ft. The maximum height of retaining walls is 20½ ft. and clear height in tunnel is 15 ft.; the width 23 ft. Tracks are 10 ft. from center to center and the width of the tunnel will allow an ordinary sized person to stand between the car and the wall. The extreme depth of excavation was near Summit avenue, 50 ft. to bottom of trench. The subway is entirely an open cut, a wide and deep trench being excavated in which the masonry was built. This saved considerable time in the construction. The excavation required taking out 43,200 cu. yds. of earth and 2,100 cu. yds. of rock. For a considerable distance the walls are founded on rock, but at the lower end the retaining walls are on pile foundations.

The structure is built of reinforced concrete in accordance with the latest ideas. It contains 10,300 cu. yds. of concrete in which were used about 12,000 barrels of cement. Imbedded in the concrete are 164 tons of steel rods and 252 tons of steel rails.

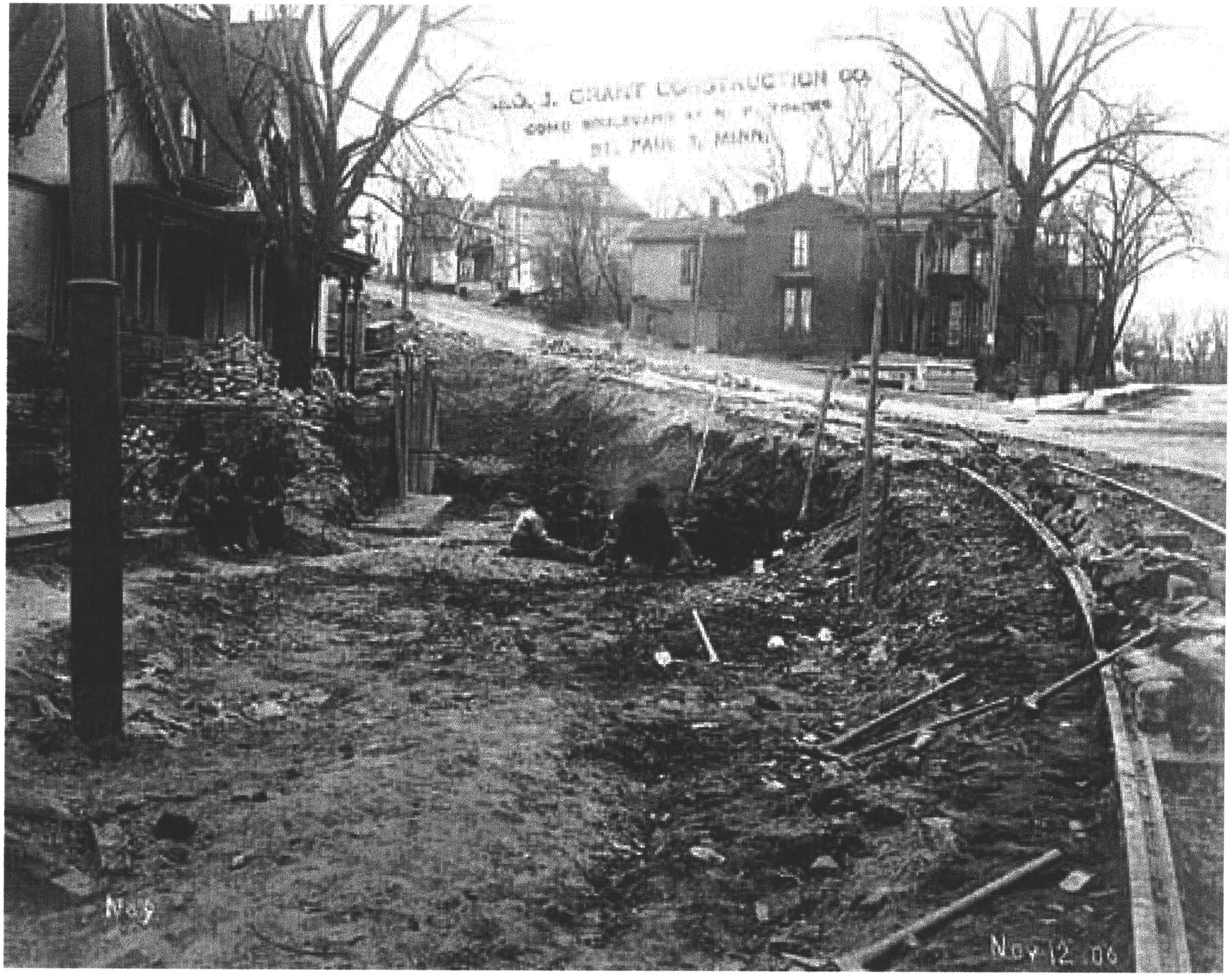
The floor of the tunnel section is flat and strongly reinforced to take care of the bending stresses. On this floor the tracks are laid and also imbedded in concrete. The track consists of 80-lb. T rail, 5 inches in height, laid on creosoted ties and fastened with screw spikes. The concrete floor can be kept clean and thus avoid the usual trouble from the dust and odors from decaying matters in ordinary stone ballast. An extensive system of pipe drains extends under the tunnel and is connected with the city sewers. In the floor on each side of the subway is a tile conduit of four ducts for electric wires and cables, connections are made from these through conduits in the concrete to the trolley wires and electric lights.

The lighting is done by 32 candle power incandescent lamps in the roof. These are spaced 10 ft. apart and set in the center of the arch.

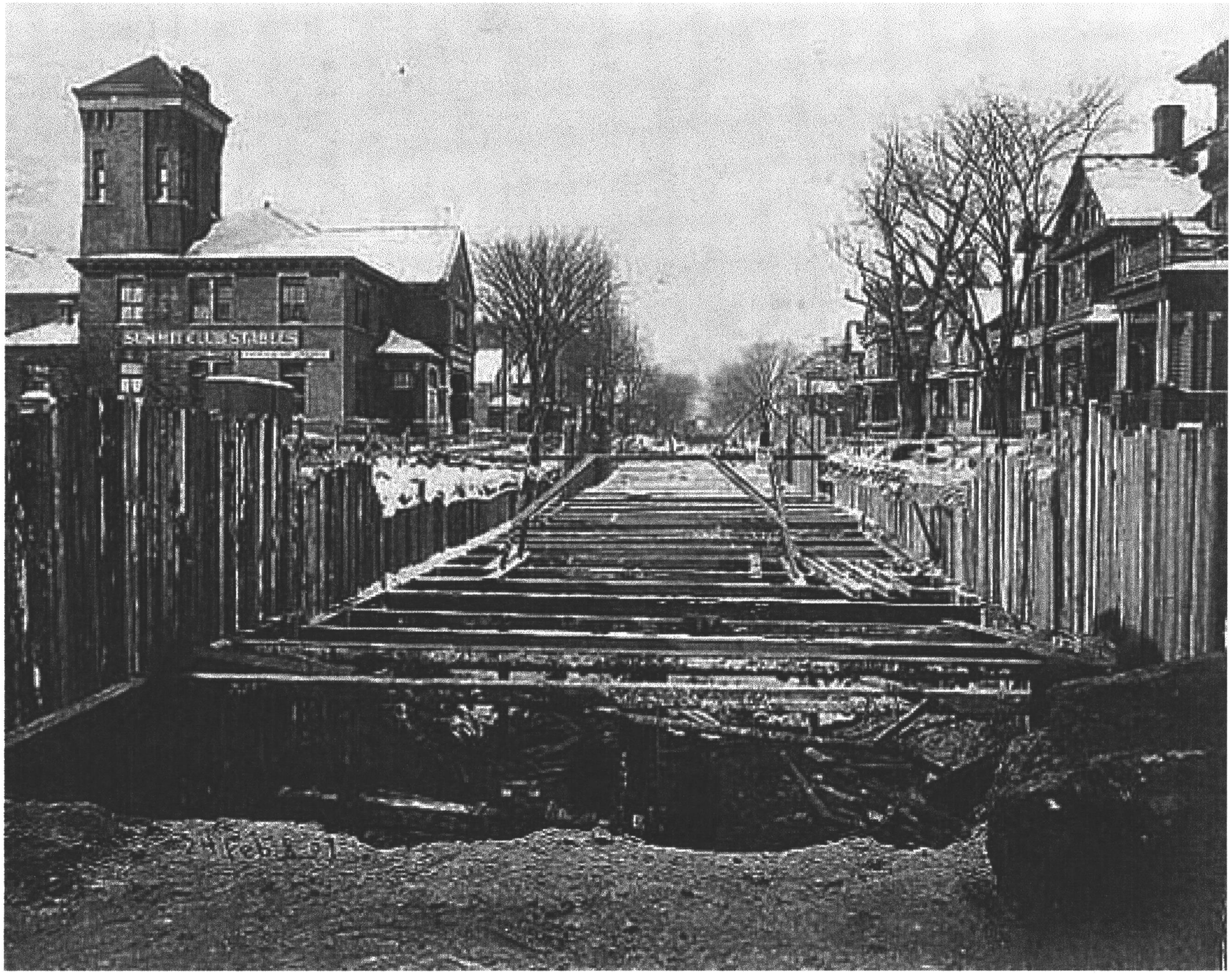
The work of repaving the street, putting in permanent gas mains, electric conduits and other changes will amount to about 30 per cent of the cost of the work, and this, as well as the track and all electric work, was done directly by the street railway forces.

The completion of this subway gives to St. Paul a much-needed improvement in its transportation facilities, and like the balance of the Twin City Rapid Transit Company's system, is in design and execution of the very best type.

POLY-VU
AVERY™

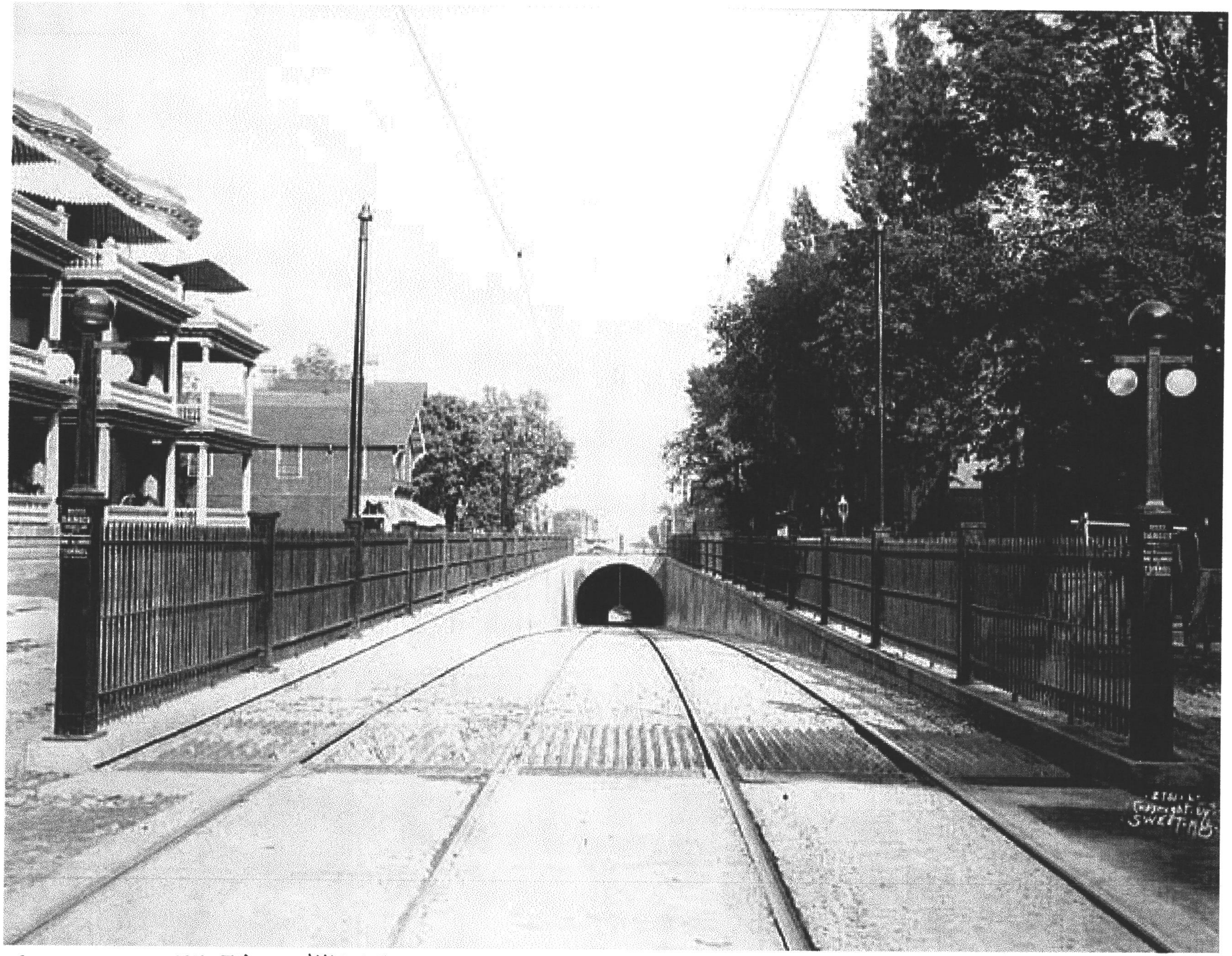

GEO. J. GRANT CONSTRUCTION CO.
COMO BOULEVARD & N. P. TRACKS
ST. PAUL, MINN.
No 9
Nov 12 06

11-12-06 LOWER ENTRANCE TO SELBY TUNNEL MHS HE4.4S p14 NEG. # 33082



2-8-07 SELBY AVE. TUNNEL CONSTRUCTION MHS HE4.ASp41 NEG.# 33419

Office DEPOT.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SELBY TUNNEL UPPER END   MHS HE 4.4S p1   NEG.# 34091

COST OF SELBY TUNNEL

	Total
Conduits	615.13
Scrap Copper	523.51
Scrap Lead	624.82
Special Roll	979.82
Manholes	542.35
Moving Sewer	5,177.00
Moving & Laying Phone Conduit	13,316.13
Inspection	42.00
(Wabasha 7 Corners Curves	4,120.91
(Farrington Ave. Selby to Rondo	6,313.82
(Smith Ave. College to 3rd	4,885.45
Temporary Tracks	1,895.56
Scrap Rail	2,345.16
Labor	25,038.43
Injuries	18,291.76
Pipe	95.51
Cement	5,597.48
Crosses etc.	337.42
Interest	3,262.84
Legal Dept.	852.87
Miscellaneous	2,198.53
M. D. Munn & others	60,531.40
Geo. Grant	200,011.08
Ties	2,092.73
Spikes	323.26
Rails & Joints	3,816.70
Catch Basins & Water Drips	332.83
Fence	4,542.70
Granite & Sansstone Blocks	2,626.71
Tie Rods	63.08
Lampposts	131.00
Geo Grant (Bridge Selby & Summit)	482.85
Resetting Curb, Sidewalk & Paving reprs.	11,393.45
Repair to Track	17.67
Scrap Steel Cable	275.00
Work Car Hauling dirt etc.	2,679.75
Cast Scrap	565.23
Crushed Rock	1,231.79
Suspense	9,669.13
Driving Piles	609.93
Test Holes	309.60
Engineer	127.88
Selby & Syndicate	990.77
Rondo & Chattsworth	432.48
Moving Poles	44.70
Moving Gas & Water Mains	2,170.80
	371,355.22

1907
ST.PAUL

The Selby Tunnel was completed August 11th with cars 1258 and 1259 being the first to operate through the tunnel. The tunnel was on a 7% grade, 1479 feet long over the walls, 920 feet long portal to portal, 23 feet wide, 15 feet 9 inches high at the center, and 50 feet deep at its greatest depth. Construction required the removal of 43,200 cubic yards of earth and 2,100 cubic yards of rock. Walls were reinforced by 164 tons of steel rod and 252 tons of steel rails. 10,300 cubic yards of concrete requiring 12,000 barrels of cement were used in pouring the walls. Total costs incurred from 1906 to 1910 amounted to $381,732. Motormen were required to take a minimum of one minute and fifty seconds downgrade between portals, and not exceed eight miles per hour.

The crossover on Winifred St. was removed and replaced with a turnout and crossing into second track for a short distance on Stryker Ave. south of Winifred St.

1907
St.LOUIS PARK-HOPKINS

The track between St.Louis Park, from W. Lake St. and Broadway Ave., to Hopkins was abandoned about May 1st; for certain by May 16th.

1908
MINNEAPOLIS

Second track added on Bryant Ave. S. from 40th St. W. to 46th St. W.
Preparations were underway in December to standardize the Robbinsdale line.

1908
St.PAUL

The Ryan Hotel sidetrack at 6th St. and Robert St. was completed July 7th.
The wye at Concord St. and Arthur St. was moved April 4th to Concord St. and Witham St.

1909
MINNEAPOLIS

The single track on 3rd Ave. N. from Washington Ave. N. to 2nd St. N. was abandoned.
A wye was built at Lake St. W. and Girard Ave. S.

The Fort Snelling loop was removed and new double track extended over right-of-way to and over the newly constructed bridge and connected with existing SPCR track on W. 7th St. This formed the fourth interurban line between Minneapolis and St.Paul and was completed June 21st.

A single track spur line 1.053 miles long was built in Fort Snelling from a wye on the main line to the reservation barracks, completed June 21st. The agreement with the U. S. Government for use of the main line right-of-way provided that this spur line was to be built and service provided over the spur line at no fare.

1909
St.PAUL

On	From	To	Date Completed
	Double Track built:		
Rice St.	Maryland Ave.	South St. (Ivy Ave.)	
Hope St.	E. 7th St.	E. 4th St.	Begun in 1908 and completed June 21st
E. 4th St.	Hope St.	Cypress St.	
	Track built:		
Randolph Ave.	Pascal St.	Snelling Ave.	Begun in 1908 and completed June 21st
Snelling Ave.	Randolph Ave.	Grand Ave.	
	Second Track added:		
State St.	Concord St.	Lucy St.	
	Track abandoned:		
Earl St.	Burns Ave.	Indian Mounds Park	October 11th

The Fair Grounds loops and storage tracks were re-arranged and a wye installed.

1910
MINNEAPOLIS

Second track added on Fulton St. S.E. from Oak St. S.E. to Erie St. S.E.; on the High St. loop; and on 1st Ave. N. from 6th St. N. to 7th St. N.

Track was abandoned on 4th Ave. S. from 3rd St. S. to 5th St. S.

1910
St.PAUL

Track built on St.Peter St. from 7th St. to 10th St.. Track abandoned on 10th St. from St.Peter St. to Wabasha St. All of this work completed July 31st.

The 4th St.-Rosabel St.-3rd St.-Broadway-4th St. loop was completed.

1911
MINNEAPOLIS

On	From	To	Date Completed
	Double Track built:		
Bryant Ave. S.	46th St. W.	50th St. W.	November 22nd
Penn Ave. N.	30th Ave. N.	38th Ave. N. (Dowling Ave.N.)	November 24th
Bloomington Ave. S.	34th St. E.	38th St. E.	December 10th
	Second Track added:		
8th Ave. S.	38th St. E.	46th St. E.	
St.Louis Park line	29th St.&Hennepin Ave.	Lagoon Bridge (Lake Calhoun)	
	Single Track built:		
18th Ave. N.E.	Central Ave. N.E.	Johnson St. N.E. (.50 mile)	November 8th
Johnson St. N.E.	18th Ave. N.E.	28th Ave. N.E.	November 8th

The single track owned by the Minneapolis, St.Paul, Rochester & Dubuque Electric Traction Co. on Nicollet Ave. from 50th St. to 54th St. (built in 1909) was acquired by MSR [redacted] as the Minneapolis city limits had been extended to 54th St. The trackage was electrified and a wye built at Nicollet Ave. and 54th St.

1912
MINNEAPOLIS

On	From	To	Date Completed
	Double Track built:		
3rd St. N.	1st Ave. N.	2nd Ave. N.	
2nd Ave. N.	3rd St. N.	Washington Ave. N.	
Fremont Ave. N.	36th Ave. N.	42nd Ave. N.	June 27th
8th St. S.E.	Central Ave. S.E.	10th Ave. S.E.	July 31st
10th Ave. S.E.	8th St. S.E.	Johnson St.	July 31st
Johnson St.	8th St. S.E.	18th Ave. N.E.	July 31st
Johnson St. N.E.	28th Ave. N.E.	29th Ave. N.E.	July 31st
Plymouth Ave. N.	Penn Ave. N.	Sheridan Ave. N.	September 8th
Grand St. N.E.	Lowry Ave. N.E.	29th Ave. N.E.	November 3rd
Cedar Ave. S.	34th St. E.	35th St. E.	November 12th
35th St. E.	Cedar Ave. S.	23rd Ave. S.	November 12th
23rd Ave. S.	35th St. E.	38th St. E.	November 12th
38th St. E.	23rd Ave. S.	28th Ave. S.	November 12th
	Single Track built:		
28th Ave. S.	38th St. E.	42nd St. E.	December 3rd
Minnehaha Ave. S.	Cedar Ave. S.	25th St. E.	November 28th
25th St. E.	Minnehaha Ave. S.	36th Ave. S.	November 28th
	Second Track added:		
St.Louis Park line	Lagoon Bridge	Excelsior Blvd.	
	Single Track abandoned:		
18th Ave. N.E.	Central Ave. N.E.	Johnson St. N.E.	July 31st
	Double Track abandoned:		
8th St. S.E.	10th Ave. S.E.	14th Ave. S.E. (.311 mile)	July 31st

Track was built into the General Contracting Company's stone quarry off Johnson St. N.E. and a crossover installed on Johnson St. near the branch-off.

The wye at Lake St. and 33rd Ave. S. was removed October 14th.

1912
St.PAUL

Double track built on Rondo Ave. from Chatsworth St. to Griggs St., completed September 7th.

New track constructed at University Ave. and Prior Ave. "Hamline-Union Depot" line cars were to pull onto the west leg of the wye on University Ave., back up, and take the layover at a point on University Ave. 175 feet east of Prior Ave.

1913
MINNEAPOLIS

On	From	To	Date Completed
	Double Track built:		
1st St. N.	Hennepin Ave.	1st Ave. N.	September 15th
28th Ave. S.	42nd St. E.	50th St. E.	September 27th
Xerxes Ave. S.	Harriet RofW	50th St. W.	October 1st
Grand St. N.E.	29th Ave. N.E.	30th Ave. N.E.	October 4th

On	From	To	Date Completed
	Single Track built:		
Lyndale Ave. N.	49th Ave. N.	51st Ave. N.	August 22nd
	Second Track added:		
28th Ave. S.	38th St. E.	42nd St. E.	September 27th

Wyes were built at: (1) 29th St. W. and Holmes Ave.; (2) Lake St. and 36th Ave. S., completed June 14th.

The construction journal records removal of a spur track at 17th Ave. N.E. and Central Ave. N.E. When this track was built was not recorded. A single track spur, 434 l.f. long, was built off Johnson St. N.E. to a dumping ground at the Minnesota Crushed Stone Co. quarry.

1913
St.PAUL

Double track built on Arcade St. from E. 7th St. to Case Ave., on Case Ave. to Forest St., and on Forest St. to Maryland Ave., completed November 10th.

Second track extended 1800 l.f. on Stryker Ave. to Augusta St.

Existing track at the Langford Ave. (Como Ave.) gravel pit was extended 500 l.f. for additional passenger car storage during the State Fair.

1914
MINNEAPOLIS

On	From	To	Date Completed
	Double Track built:		
20th Ave. N.	Washington Ave. N.	13th Ave. N.E.	June 27th
13th Ave. N.E.	20th Ave. N.	Washington St. N.E.	June 27th
Washington St. N.E.	13th Ave. N.E.	Broadway St. N.E.	June 27th
Broadway St. N.E.	Washington St. N.E.	Jackson St. N.E.	June 27th
Fremont Ave. N.	42nd Ave. N.	44th Ave. N.	June 28th
Dartmouth Ave. S.E.	Superior St. S.E.	27th Ave. S.E.	October 28th
27th Ave. S.E.	Dartmouth Ave. S.E.	Franklin Ave. loop	October 28th
Franklin Ave. E.	4th Ave. S.	27th Ave. S.E.	October 31st
11th St. S.	4th Ave. S.	Hennepin Ave.	October 31st
	Single Track built:		
Cedar Ave. S.	35th St. E.	42nd St. E.	June [redacted] 13th
50th St. W.	Xerxes Ave. S.	Penn Ave. S.	OCTOBER 31ST
50th St. E.	28th Ave. S.	34th Ave. S.	October 25th
	Second Track added:		
Minnehaha Ave. S.	Cedar Ave. S.	25th St. E.	
25th St. E.	Minnehaha Ave. S.	36th Ave. S.	

A new wye and storage track was built at 5th St. N. and 5th Ave. N. A loop replaced the wye at Washington Ave. N. and 42nd Ave. N.

Single track built on Crystal Lake Road (now Broadway Ave.) from Penn Ave. N. to the city limits connecting there with the existing Robbinsdale line track. Track was abandoned on 32nd Ave. N. from Penn Ave. N. to this new connection. Track in Robbinsdale on Hubbard Ave. was abandoned and relocated on France Ave. N. and Crystal Lake Road (see map). All of this work was completed between September 3rd and October 31st.

1914
St.PAUL

On	From	To	Date Completed
Double Track built:			
Dale St.	Grand Ave.	Maryland Ave.	October 23rd
Single Track built:			
Burns Ave.	Earl St.	Clarence St.	July 1st
Western Ave.	Como Ave.	Cook St.	November 4th

A siding was built off the wye on Duluth Ave. at E. 7th St. Station.

1914
INTER-CAMPUS LINE

The main campus of the University of Minnesota is located in southeast Minneapolis while the agricultural campus is located in northwest St.Paul. All of the coal and building materials needed by the agricultural school had to be transported by costly horse-drawn wagons. A railroad connection was considered the solution to the problem. As a second thought, passenger service between the two campuses appeared attractive because it would save time and money for students who had classes on both campuses, it would save money for the university which would not have to duplicate courses for the separate colleges as was then being done, and a closer union could be developed between the two campuses. The legislature in 1913 granted an appropriation for the construction of an electric railway connecting with TCRT trackage to be used for passenger and freight service. University engineering students surveyed the route and the contractor finished the grading by the end of 1913. Track and overhead trolley wire were installed by MSR during 1914. This was essentially a single track line with a short length of double track on each portion. About 2½ miles of track were owned by the university:

1. on 15th Ave. S.E. from a connection with MSR at 4th St. S.E. to a wye behind the mechanic arts building on the main campus;
2. from a connection with SPCR at Como Ave. and Eustis St., on private right-of-way to the agricultural campus. A connection with the Minnesota Transfer Railway was located at the western end of this part of the line.

The completed line was opened November 4th. Total cost was $82,199.

Refer to Track Map on page 48

SPCR connection at Como Ave. and Eustis St.	0+00	
End of double track	3+79.85	.072 miles
Switch to Minn. Transfer Ry. connection	11+97.6	.227 miles
Cleveland Ave.	50+91.3	.964 miles
Farm Campus siding switch. Siding was 375 l.f. long	68+33.8	1.294 miles
Farm Campus loop: north switch	74+95.6	1.4196 miles
Farm Campus loop: south switch	78+58.3	1.488 miles
Powerhouse: end of track	82+44.91	1.5615 miles

The Minn. Transfer Ry. connection was measured working westward from the passenger line switch.

Railroad connection	0+63.47	
Siding-west switch	2+25	
Siding-east switch	6+75	
Passenger line switch	11+97.6	.215 miles

1915
MINNEAPOLIS

A loop and storage track on the Fort Snelling right-of-way at 53rd St. was completed during April. The crossing over the C.M. & StP. Ry., previously single track, was now made double track. A double track spur line with loops and storage tracks was built from the Fort Snelling right-of-way to the Motor Speedway, completed September 4th.

On the Robbinsdale line, cars were wying at Crystal Lake Road and Russell Ave. N. as of August 5th, indicating that second track may have been extended to this point and a wye installed.

1915
St.PAUL

Double track built on St.Clair Ave. from W. 7th St. to Oxford St., opened June 1st.

Double track built on E. 4th St. from Cypress St. to Terry St., and single track from Terry St. to Atlantic St., opened November 15th. The single track portion was approximately 1200 ft. long.

1916
MINNEAPOLIS

On	From	To	Date Completed
	Double Track built:		
Western Ave. (Glenwood Ave.)	Penn Ave. N.	Glenwood Park	June 24th
A wye was built at Aldrich Ave. and Western Ave. for storage of seven cars at rush hours to serve the workers of the Northwestern Knitting Works Co.			November 7th
Franklin Ave.	27th Ave. S.	Mississippi River Blvd. loop	December 17th

1916
St.PAUL

Single track built on Randolph Ave. from Snelling Ave. to Cleveland Ave.

A new wye was built at Forest St. and Lake Como & Phalen Blvd., completed March 27th.
An additional track was installed at Como Ave. and Eustis St. at the junction with the Inter-Campus line to form a wye, completed December 6th.

1917
MINNEAPOLIS

The Motor Speedway spur line, loops and storage tracks were abandoned July 7th.

1917
St.PAUL

Track built on Maryland Ave. from Forest St. to Duluth Ave., opened October 5th.

Second track added on St.Clair St. from Crow St. to Oxford St. September 1st, and new double track built from Oxford St. to Fairview Ave., ~~all~~ opened October 22nd.
Second track extended 600 l.f. on Concord St.

1917-1918
St.PAUL

New track built on Locust St. from 7th St. to 10th St.; replaced track abandoned on 10th St. from Broadway St. to Locust St.

1919
MINNEAPOLIS

A new crossover was installed on 1st Ave. N. between 6th St. N. and 7th St. N. The track map dated 1-1-1916 also showed a crossover on 6th St. N. near 1st Ave. N. The wye at 29th Ave. N.E. and Central Ave. N.E. was relocated to 31st Ave. N.E.

1919
St.PAUL

Double track on Concord St. in South St.Paul ended at the C.G.W. Ry. Klondike Spur crossing. Second track was extended over the crossing to 6th St. and a wye built at 6th St.

10-6-1919 will be ready in about a week.

1920
MINNEAPOLIS

On	From	To	Date Completed
	Double Track built:		
2nd Ave. S.	Washington Ave. S.	1st St. S.	October 18th
1st St. S.	2nd Ave. S.	3rd Ave. S.	October 18th
3rd Ave. S.,	across new 3rd Ave. bridge	Central Ave. S.E.	October 18th
Central Ave. S.E.	3rd Ave. bridge	Hennepin Ave. E.	October 18th
2nd Ave. S.	6th St. S.	8th St. S.	December 1st
8th St.	2nd Ave. S.	2nd Ave. N.	December 1st
2nd Ave. N.	8th St. N.	7th St. N.	December 1st
7th St. N.	2nd Ave. N.	Emerson Ave. N.	December 1st
Emerson Ave. N.	7th St. N.	Broadway Ave. W.	December 1st
1st Ave. N.	Washington Ave. N.	1st St. N.	
1st Ave. N.	7th St. N.	11th St. N. and Hawthorne Ave.	
11th St. N.	Hawthorne Ave. N.	Hennepin Ave.	
5th Ave. S.	Washington Ave. S.	5th St. S.	
5th St. S.	4th Ave. S.	5th Ave. S.	
Hennepin Ave. E.	Johnson St. S.E.	17th Ave. S.E.	October 28th
A wye was located at 17th Ave. S.E. and Hennepin Ave. E. until depressed track under the railroad bridge on Stinson Blvd. could be completed.			
Stinson Blvd.	17th Ave. S.E and Hennepin Ave. E.	Broadway St.	December 27th

The construction journals indicate second track added on 11th St. from Harmon Place to Hawthorne Ave. N. Second track extended 350 l.f. on Nicollet Ave. from 50th St. to 51st St. Crossover removed on 6th St. N. near 1st Ave. N. Crossover removed on 2nd St. N.E. near Hennepin Ave. E.

The siding on the Harriet right-of-way between Xerxes Ave. and Upton Ave. was used for storing extra cars to meet the 10 p.m. evening traffic rush generated by the band concerts, pleasure boating and swimming at Lake Harriet. The siding was double end, but during the winter months the switch at the west end was removed.

1920
St.PAUL

Wye curve added at Randolph Ave. and Snelling Ave. Second track added on Randolph Ave. a short distance west of Snelling Ave. Wye built at Randolph Ave. and Cleveland Ave.

Second track added on E. 4th St. from Rosabel St. to Broadway St.; double track built on Broadway St. from E. 4th St. to E. 5th St. Second track added on Concord St. from 6th St. to Richmond St.

At Wabasha St. and 5th St. the second track (northbound) on Wabasha St. was extended through the curves across 5th St.

Track mileage details of the South St.Paul line
Concord St. and Annapolis St. to Concord St. and Linden St.
1-1-1920

Main line:	tangent track		7.118 miles
	tangent track at ends of wyes		.048 miles
	special track (*)		.338 miles
	guarded curve track		.143 miles
	steam railroad crossings		.010 miles
			7.657 miles
Carhouse track (Malden St. yard/Spring Park loop):	tangent track	2,189 l.f.	.414 miles
	special track: 7 switches	948.6 l.f.	.180 miles
			.594 miles
Miscellaneous tangent track:	South St.Paul Sand Pit	187.6 l.f.	.036 miles
Total track:			8.287 miles

(*) This included special track at the South St.Paul Sand Pit: 172.6 lf. on Concord St. and 241.4 l.f. in the sand pit.

Buildings in the sand pit comprised a frame sand hopper and conveyor building, frame tool house, and frame comfort station.

The South Park right-of-way began just south of Butler Ave. and ended just north of Central Ave.

1921
MINNEAPOLIS

On	From	To	Date Completed
Double Track built:			
E. Hennepin Ave.	8th St. S.E.	Johnson St. S.E.	August 3rd
Single Track built:			
36th Ave. S.	Lake St. E.	34th St. E.	September 25th
34th St. E.	36th Ave. S.	42nd Ave. S.	September 25th
42nd Ave. S.	34th St. E.	41st St. E.	September 25th
Passing sidings were located on (1) 34th St. between 36th Ave. S. and 37th Ave. S., and (2) 42nd Ave. S. between 37th St. E. and 38th St. E.			
Cedar Ave. S.	42nd St. E.	50th St. E.	June 16th
Second Track added:			
Cedar Ave. S.	35th St. E.	42nd St. E.	June 16th
Nicollet Ave. S.	50th St.	52nd St.	
Crossover installed at 52nd St. and the wye there rebuilt.			

Wye curve installed at W. Broadway and Penn Ave. N.; second track extended 150 l.f. on W. Broadway from Penn Ave. Curves were removed at 5th St. S. and Marquette Ave. S.

1922
MINNEAPOLIS

Double track built on (1) Chicago Ave. S. from 46th St. E. to 48th St. E., and (2) 38th Ave. N. from Penn Ave. N. to Thomas Ave. N., all completed September 11th.

Fern Siding, 342 l.f. long, was installed on the St.Louis Park line. A telephone booth for dispatching purposes was also placed there.

1922
St.PAUL

Double track built on St.Clair Ave. from Fairview Ave. to Cleveland Ave., completed December 2nd.

Wye built at Selby and Nina Avenues.

1923
MINNEAPOLIS

On	From	To	Date Completed
Double Track built:			
Morgan Ave. N.	Broadway Ave.	19th Ave. N.	January 3rd
19th Ave. N.	Morgan Ave. N.	Upton Ave. N.	January 3rd
Bloomington Ave. S.	38th St. E.	48th St. E.	May 22nd
4th Ave. S.	38th St. E.	48th St. E.	September 24th
Grand Ave. S.	40th St. W.	48th St. W.	October 1st
Thomas Ave. N.	38th Ave. N.	42nd Ave. N.	November 1st
36th Ave. S.	25th St. E.	Lake St. E.	November 19th
Washington St. N.E.	17th Ave. N.E.	22nd Ave. N.E.	December 4th
Single Track built:			
Johnson St. N.E.	29th Ave. N.E.	33rd Ave. N.E.	November 1st
41st St. E.	42nd Ave. S.	46th Ave. S.	November 19th

46th Ave. S.	41st St. E.	46th St. E.	November 19th

The siding on 34th St. was removed and the siding on 42nd Ave. S. was relocated to between 36th St. E. and 37th St. E.

	Second Track added:		
36th Ave. S.	Lake St. E.	34th St. E.	November 19th

A wye was built on the vacant lot adjacent to the Girard Ave. Substation; crossovers were installed on Girard Ave. and on Lake St. near Hennepin Ave.; all completed by 1924.

On the Robbinsdale line, a loop was constructed at Broadway Ave. W. and Washburn Ave. N.; apparently second track was added to this point. The wye at Russell Ave N. removed. All this work completed June 1st.

1923

St.PAUL

On	From	To	Date Completed
	Double Track built:		
Payne Ave.	Brainerd Ave. and Edgerton St.	Nebraska Ave.	August 20th

On August 13th the wye at Brainerd Ave. and Edgerton St. was removed. Short line cars were to wye at Brainerd Ave. and Burr St. Long line cars wyed at Nebraska Ave., backing down to the end of track near Montana Ave. where the layover was taken.

	Single Track built:		
Maryland Ave.	Dale St.	Wheelock Parkway	November 15th
	Second Track added:		
Randolph Ave.	Snelling Ave.	Cleveland Ave.	August 14th

The crossover on Robert St. between 5th and 6th Streets was removed.

A crossover was installed at Earl St. and Burns Ave. and a wye built at the east end of the line. Shuttle service with double end cars was discontinued and regular cars ran through to the end of the line.

1924

MINNEAPOLIS

Double track built on the Franklin Ave. bridge over the Mississippi River to connect the trackage on Franklin Ave. with the trackage at 27th Ave. S.E. The loops at the ends of the former lines were removed during the construction and replaced by wyes located at (1) Franklin Ave. and 30th Ave. S.E., and (2) 27th Ave. S.E. and Yale Ave. S.E. All work was completed December 13th.

On	From	To	Date Completed
	Second Track added:		
Johnson St. N.E.	29th Ave. N.E.	33rd Ave. N.E.	
34th St. E.	36th Ave. S.	42nd Ave. S.	
42nd Ave. S.	34th St. E.	41st St. E.	
Nicollet Ave. S.	52nd St.	Diamond Lake Road	November 15th

The crossover at 52nd St. was removed but the wye remained until 1926. The wye at the M.N.&S. Ry. Terminal at 54th St. was removed; new wyes installed at 48th St. and at Diamond Lake Road.

A double track wye replaced the single track wye at Oak and Beacon Streets S.E. The curve at 2nd St. N.E. and Broadway St. was rebuilt to reduce the degree of curvature.

1924
St.PAUL

Single track built on Cleveland Ave. from Randolph Ave. to Ford Parkway and on Ford Parkway from Cleveland Ave. to a loop at Mt. Curve Ave., completed January 21st.

Double track built on Pascal St. from Como Ave. to Lake Como-Phalen Blvd. (Arlington Ave.), completed November 10th.

Temporary double track built on Delos St. between Wabasha St. and Robert St., used from August 19, 1924, until August 27, 1926, while the new Robert St. bridge over the Mississippi River was under construction.

The single track wye at S. Robert St. and Annapolis St. was replaced with a double track wye and turnout. Abandoned wyes were removed: (1) Como Ave. and Hamline Ave. (800 l.f.), and (2) Forest St. and Lake Como-Phalen Ave. (700 l.f.).

1925
MINNEAPOLIS

On	From	To	Date Completed
Single Track built:			
Cedar Ave. S.	50th St. E.	52nd St. E.	
(The Lake Nokomis loop comprised 474.8 l.f. of track.)			
52nd St. E.	Cedar Ave. S.	Bloomington Ave. S.	
France Ave. S.	Harriet R/W	50th St. W.	October 9th
45th Ave. N.	Lyndale Ave. N.	Bryant Ave. N.	November 11th
Bryant Ave. N.	45th Ave. N.	52nd Ave. N.	November 11th
A siding 275 l.f. long was located on 45th Ave. N. between Aldrich Ave. N. and Bryant Ave. N.			
Track abandoned:			
Lyndale Ave. N.	45th Ave. N.	51st Ave. N.	November 11th

The wye at 5th St. N. and 5th Ave. N. was relocated to private property adjacent to 5th Ave. N. and the siding built.

1925
St.PAUL

Single track on Cleveland Ave. and Ford Parkway was removed replaced with new double track. The double track was extended on Ford Parkway to the Ford Plant. A loop and storage track were built on Ford Motor Co. property on the south side of Ford Parkway.

1926
MINNEAPOLIS

On	From	To	Date Completed
Double Track built:			
44th Ave. N.	Fremont Ave. N.	Oliver Ave. N.	January 15th
42nd St. E.	Cedar Ave. S.	Hiawatha Ave. S.	November 28th
Hiawatha Ave. S.	42nd St.	34th Ave. S.	November 28th
34th Ave. S.	Hiawatha Ave. S.	54th St. E.	November 28th
The trackwork at the intersection of 28th Ave. S. and 42nd St. E. was re-arranged.			
Single Track abandoned:			
50th St. E.	28th Ave. S.	34th Ave. S.	November 28th

1927
MINNEAPOLIS

On	From	To	Date Completed
Double Track built:			
50th St. W.	Bryant Ave. S.	Penn Ave. S.	October 16th
46th Ave. S.	46th St. E. to and on the newly built Ford Bridge over the Mississippi River, and on Ford Parkway, St.Paul, to a connection with SPCR trackage at the Ford Motor Co. loop		December 2nd
Single Track built:			
Penn Ave. S.	50th St. W.	54th St. W.	October 16th
Second Track added:			
Laurel Ave.	Colfax Ave.	Oliver Ave.	
50th St. W.	Xerxes Ave. S.	Penn Ave. S.	
41st St. E.	42nd Ave. S.	46th Ave. S	December 2nd
46th Ave. S.	41st St. E.	46th St. E.	December 2nd
Lyndale Ave. N	42nd Ave. N.	45th Ave. N.	September 8th
45th Ave. N.	Lyndale Ave. N.	Bryant Ave. N.	September 8th
Bryant Ave. N.	45th Ave. N.	52nd Ave. N.	later in the year

1927
St.PAUL

On	From	To	Date Completed
Double Track built:			
Lafayette Road (relocating track from Locust St.)	E. 7th St.	E. 10th St.	August 1st
Arlington Ave.	Pascal St.	Hamline Ave.	August 7th
Hamline Ave.	Arlington Ave.	Hoyt Ave.	August 7th
Snelling Ave.	Randolph Ave.	Otto St.	August 7th

A new wye was built on Prior Ave. at Charles St., completed Novembeer 30th.

1928
MINNEAPOLIS

On	From	To	Date Completed
Double Track built:			
Chicago Ave. S.	48th St. E.	54th St. E.	January 22nd
Nicollet Ave. S.	54th St.	58th St.	August 30th
Bloomington Ave. S.	48th St. E.	52nd St. E.	September 13th
Single Track built:			
Laurel Ave. with one siding: on Laurel Ave. between Knox Ave. and Morgan Ave.	Oliver Ave.	Upton Ave.	November 15th
Track abandoned:			
Cedar Ave. S.	50th St. E.	52nd St. E.	September 13th
52nd St. E.	Cedar Ave. S.	Bloomington Ave. S.	September 13th

1928
St.PAUL

The single track along the side of Concord St. from Linden St. to Faulkner Ave. in the village of Inver Grove was acquired by the village from the abandoned St.Paul Southern Electric Railway on October 31st and leased to the Minneapolis & St.Paul Suburban Railroad for operation.

The South St.Paul sand pit was sold to the South St.Paul Cement Block Manufacturing Co.

1929
MINNEAPOLIS

Double track built on 28th Ave. S. from 50th St. E. to 56th St. E., completed November 30th.

Second track added on France Ave. S. from the Harriet right-of-way (44th St. W.) to 50th St., completed July 20th. Single track built on France Ave. S. from 50th St. W. to 54th St. W., completed September 16th.

On the Robbinsdale line, second track had been added from Broadway Ave. and Washburn Ave. N. to Ewing Ave. N. and Oakdale Ave. N. at an unknown date. The first reference to this construction is a company operational bulletin dated December 6th.

1930
MINNEAPOLIS

Double track built on 42nd Ave. S. from Minnehaha Ave. S. to 54th St. E., and on 54th St. E. from 42nd Ave. S. to a connection with the existing trackage on the Fort Snelling right-of-way. Track on the Fort Snelling right-of-way from the Minnehaha Falls loop at 51st St. to the new connection at 54th St. was abandoned, along with the loop at 53rd St. and Hiawatha Ave. This work was completed November 19th.

1930
St.PAUL

Single track built on Maryland Ave. from Duluth Ave. to Kennard St., completed June 14th.

The stone quarry track at W. 7th St. and Victoria St. was removed.

1931
MINNEAPOLIS

Double track built on Bryant Ave. S. from 50th St. W. to 56th St. W., completed October 30th.

Double track built on Washington St. N.E. from 22nd Ave. N.E. to 27th Ave. N.E., completed November 26th.

Double track built on 1st St. S. between Hennepin Ave. and Marquette Ave. (1st Ave. S.). Track on High St. from Hennepin Ave. to Marquette Ave., and on Marquette Ave. from High St. to 1st St. S. was abandoned. This work was completed November 5th.

1931
St.PAUL

Single track built on Rosabel St. from E. 4th St. to E. 5th St.

The crossover on Earl St. near Burns Ave. was installed and the wye built at Burns Ave. and English St.

The single track on E. 8th St. between Wabasha St. and Robert St. was removed. Single track bult on Robert St. from E. 8th St. to E. 9th St. and on E. 9th St. from Robert St. to Wabasha St.

1933
MINNEAPOLIS

Double track built on Bloomington Ave. S. from 52nd St. E. to 54th St. E., completed October 12th. The wye at Bloomington Ave. and 52nd St. was removed.

Track on Cedar Ave. S. from 42nd St. E. to 50th St. E. was abandoned September 17th.

1933
St.PAUL

The former St.Paul Southern Electric Railway track alongside Concord St. from Linden St. to Faulkner Ave. was abandoned October 13th. The last car left Faulkner Ave. at 11:32 p.m.

1934
MINNEAPOLIS

The wye at Central Ave. N.E. and 40th Ave. N.E. was relocated to 40th Ave. N.E. and Van Buren Ave. N.E., completed June 30th. The wye at France Ave. S. and 50th St. W. was relocated to France Ave. S. and 51st St. W. [redacted]: November 10th.

1934
St.PAUL

Rail and special work of the Fair Grounds loops and storage tracks north of Judson St. were removed and re-used in reconstruction of shortened loops and storage tracks all south of Judson St.

1935
MINNEAPOLIS

A wye was installed at 54th St. W. and 47th Ave. S.

1935
St.PAUL

A wye was built at Prior Ave. and Oakley Ave., completed June 17th. The wye at W. 7th St. and Tuscarora St. was removed.

An underpass replaced the viaduct over the Minnesota Transfer Railway on University Ave. Refer to the track map on page 48: the trackage at University and Prior Avenues indicated by the dotted lines was removed together with the connecting tracks to the Minn. Transfer Ry.

1937
St.PAUL

The wye at Smith Ave. and Annapolis St. was rebuilt to the configuration shown on the map on page 49.

1938
MINNEAPOLIS

The wyes at the following locations were removed: (1) Grand Ave. S. and 40th St. W., August 1st; and (2) Minnehaha Ave. S. and 37th St. E. (site of the original Ball Park), August 5th.

Minnesota Highway Department highway construction proposals caused applications to be filed during 1937 for abandonment of the "St.Louis Park" and "Kenwood" lines, but as portions of the replacement bus lines were to be operated over streets controlled by the Minneapolis Park Board, approval had to be sought from them which delayed the abandonments until August 27, 1938. On that date the following trackage was abandoned.

(1) "St. Louis Park" line: on 29th St. (now Lagoon Ave.) and W. Lake St. from Hennepin Ave. to Brownlow Ave. in St. Louis Park.

(2) "Kenwood" line: on Douglas Ave. from Hennepin Ave. to Penn Ave.S. and on Penn Ave. S. to 21st St. W.

1938
St.PAUL

The "Merriam Park" line was abandoned August 27th: on Prior Ave. from Marshall Ave. to University Ave.

The "Jackson St." line was abandoned October 29th: on Jackson St. from 5th St. to Maryland Ave. (Note: that segment north of Acker St. was originally named Cortland St.)

The "South Robert St." line was abandoned October 29th: on S. Robert St. and S. State St. from Concord St. to Annapolis St.

1939
MINNEAPOLIS

The Lake Harriet loop was removed from service January 9th. The switches and crossing on the main line were removed but rail on the loop itself was not removed until 1950.

The "Bryn Mawr" line was abandoned June 29th: from 12th St. and Hennepin Ave. on 12th St. N., Hawthorne Ave., Aldrich Ave., and Laurel Ave. to Upton Ave.

1939
St.PAUL

The "Hope St." line was abandoned: on Hope St. and E. 4th St. from E. 7th St. to Atlantic Ave., December 2nd.

Double track built on 10th St. from St.Peter St. to Wabasha St.; track abandoned on St.Peter St. from W. 10th St. to W. 7th St., all completed December 2nd.

1940
MINNEAPOLIS

The "6th Ave. No." line was abandoned May 25th: on 6th Ave. N. from the intersection of 5th St. N. and 5th Ave. N. to Russell Ave. N.

The "Franklin-11th St." line was abandoned November 29th: on Franklin Ave. E. from Cedar Ave. S. to 27th Ave. S.E. and Yale Ave. S.E., and on 11th St. S. from 4th Ave. S. to Hennepin Ave.

1940
St.PAUL

The 4th St.-Rosabel St.-3rd St.-Broadway St. loop was abandoned except for wye at 4th and Rosabel Streets. The wye at Concord St. and Marie Ave. was removed. The southbound turnout north of E. 7th St. on Robert St. and two single track crossings on E. 7th st. were removed during 1939-1940.

1941
MINNEAPOLIS

The wye at 11th St. N. and Hawthorne Ave. was removed as was the side track off the Glenwood Park wye.

1941
St.PAUL

The "Western Ave." line was abandoned August 23rd: on Western Ave. from Como Ave. to Cook Ave.

1942
MINNEAPOLIS

Second track added on the Robbinsdale line, from Oakdale Ave. N. and Ewing Ave. N. on W. Broadway Ave. to W. Broadway Ave. and France Ave., completed June 9th.

~~A wye was installed~~ wye at France Ave. S. and ~~51st~~ 50th St. W.; [redacted] Only the main line switches had been removed at 50th St.; the wye rails remained in the street.

1943
MINNEAPOLIS

A single track extension of the wye at Grand St. N.E. and 30th Ave. N.E. was built on 30th Ave. N.E., together with a siding, to Marshall St. N.E. MSR cars backed down this track to connect with cars of the Minneapolis, Anoka & Cuyuna Range Railroad serving the Northern Ordnance Inc. plant at Fridley. The siding was for car storage. This service began November 22nd.

1946
MINNEAPOLIS

A wye was installed at France Ave. N. and 36th Ave. N. The wye at 3rd Ave. N. and 7th St. N. adjacent to the Electric Short Line Terminal Co. depot was removed September 25th.

1947
MINNEAPOLIS

Second track added on France Ave. S. from 49th St. W. to 51st St. W. The rails in the wye at 50th St. were removed and the wye at 51st St. rebuilt (1946-1947).

Double track built on Nicollet Ave. S. from 58th St. to 62nd St., completed November 15th. This was the last new track extension in either city.

Track abandoned on Lyndale Ave. N. from 42nd Ave. N. to 45th Ave. N., on 45th Ave. N. to Bryant Ave., and on Bryant Ave. N. to 52nd Ave. N., August 2nd.

Track abandoned in Robbinsdale from France Ave. N. and 36th Ave. N. to Broadway Ave. W. and 42nd Ave. N., October 11th.

1948
MINNEAPOLIS

The "Northwest Terminal" line was abandoned January 10th: on E. Hennepin Ave. from 8th St. S.E. to Stinson Blvd. and on Stinson Blvd. to Broadway St.

The remainder of the "Robbinsdale" line was abandoned July 10th: on W. Broadway Ave. from Penn Ave. N. to 36th Ave. N.

1948
St.PAUL

The "Rondo-Stryker" line was abandoned January 24th which involved the following trackage: On Rondo Ave., Rice St. and 10th St., from Griggs St. to Wabasha St., and on Stryker Ave. from Winifred St. to Annapolis St.

Track abandoned October 30th on Maryland Ave. from Forest St. to Kennard St. Track on Arcade St., Case Ave., and Forest St. from E. 7th St. to Maryland Ave. was removed from service April 5th because of bridge construction on Arcade St. On October 30th it was decided to abandon this trackage instead of laying track on the new bridge.

A temporary wye was installed at Cypress St. and Hudson Road because of bridge construction on Earl St. The trackage on Plum St. from Maria Ave. to Hudson Road was abandoned. New track was built on Hudson Road from Maria Ave. to Plum St. All of the foregoing work was completed July 20th. The temporary wye was removed and the line re-opened east of Cypress St. on March 1st, 1949.

Inter-Campus Line
Original Cost

Right-of-Way	$15,162 —
Adv. Bids / Blueprints	53.70
Condemnation Proceedings	5,743.62
Freight	1,549.79
Grading, etc	13,824.49
Material	36,577.37
Supt. & Engineering	3,989.40
Wood Tar (sic)	4,500 —
Waiting Station	600 —
Equipment Station	8,198.45
Total	$82,198.82

Fares

Junction to University		2¢ cash
Campus to Campus		5¢ cash
Tickets	6 rides for	25¢
Tickets	50 rides for	$2 —

1950
MINNEAPOLIS ABANDONMENTS

April 16th: "Broadway" line; trackage involved was Broadway from Jackson to Monroe, 13th Ave. N.E. from Washington St. N.E. to Washington Ave. N., and 19th Ave. N. (now Golden Valley Road) and Morgan Ave. N. from Broadway to Upton Ave. N.

August 19th: "28th Ave. S."; trackage involved was Franklin Ave. from Bloomington Ave. to Cedar Ave., Cedar Ave. from Minnehaha Ave. to Lake St., 35th St. from Cedar Ave. to 23rd Ave. S., 23rd Ave. S. from 35th St. to 38th St., 38th St. from 23rd Ave. S. to 28th Ave. S., and 28th Ave. S. from 38th St. to 56th St. The track arrangement in the intersection of 28th Ave. S. and 42nd St. was rebuilt to connect the two sections on 42nd St. so that cars could run through on 42nd St. from Cedar Ave. to Hiawatha Ave./34th Ave. S.

1951
MINNEAPOLIS ABANDONMENTS

July 28th: a wye was built at 37th Ave. N.E. and Central Ave. N.E. and that part of the "Columbia Heights" line north of this point was abandoned: Central Ave. from 37th Ave. N.E. to 40th Ave. N.E., and 40th Ave. N.E. from Central Ave. to 5th St. N.E.

1952
MINNEAPOLIS ABANDONMENTS

May 17th: Fremont Ave. N. from 36th Ave. N. to 44th Ave. N., and 44th Ave. N. from Fremont Ave. to Oliver Ave. N.

August 1st: Fort Snelling spur line.

August 11th: France Ave. S. from 44th St. (Harriet right-of-way) to 54th St.

August 23rd: 15th Ave. S. from Franklin Ave. to 7th St., 7th St. from 15th Ave. S. to 10th Ave. S., 10th Ave. S. from 7th St. to 6th St., 6th St. from 10th Ave. S. to 8th Ave. S., 8th Ave. S. from 6th St. to 4th St., and 4th St. from 8th Ave. S. to 2nd Ave. S.

September 13th: 2nd Ave. S. from 6th St. to 8th St., and 8th St. from 2nd Ave. S. to 1st Ave. N., the southbound and westbound tracks only. (Introduction of one-way street traffic.)

September 24th: 2nd Ave. S. from Washington Ave. to 1st St., 1st St. from 2nd Ave. S. to 3rd Ave. S., 3rd Ave. S. and Central Ave. from 1st St. over the 3rd Ave. bridge to E. Hennepin Ave., southbound track only, removed from regular service. Pullouts on the "Plymouth-E. 25th St." line used this track until May 16, 1953, when both southbound and northbound tracks were completely abandoned.

October 18th: Grand Ave. S. from Lake St. to 48th St.

1952
St.PAUL ABANDONMENTS

All of the St.Paul local lines were abandoned during this year, leaving only the three interurban lines in operation: :"Como-Harriet", "Mpls.-St.Paul" ("Interuban"), and "Selby-Lake".

May 3rd: "Dale St."
Dale St. from Grand Ave. to Maryland Ave., and on Maryland Ave. from Dale St. to Wheelock Parkway.

May 17th: "Ft. Snelling-Maria-47 Ave.", "Randolph-Hazel Park" and "Rice-South St.Paul".

Maria Ave. from E. 7th St. to Hudson Road, Hudson Road from Maria Ave. to Earl St., Earl St. from Hudson Road to Burns Ave., and Burns Ave. from Earl St. to English St.

Randolph Ave. from W. 7th St. to Cleveland Ave., Cleveland Ave. from Randolph Ave. to Ford Parkway, and Ford Parkway from Cleveland Ave. to the Ford Plant loop.

Rice St. from Como Ave. to Ivy Ave. (South St.).

Robert St. from 4th St. to Concord St., Concord St. from Robert St. to the South St.Paul-Inver Grove village limits at Linden St.

W. 7th St. from St.Clair Ave. to the Fort Snelling wye.

E. 7th St. from Lafayette Road to the Stillwater right-of-way, and on the right-of-way to the wye at Hyacinth Ave. (Hazel Park).

September 6th: "St.Clair-Payne-Phalen" and "Snelling Avenue".

On Lafayette Road, Collins Ave., Burr St., Minnehaha Ave., Payne Ave., Greenbrier St., Maryland Ave., and Forest St. from E. 7th St. to Phalen Park.

St.Clair Ave. from W. 7th St. to Cleveland Ave., and E. and W. 7th St. from St.Clair Ave. to Lafayette Road, except for the portion between Ramsey St. and Wabasha St.

Snelling Ave. from Highland Parkway (Otto St.) to Como Ave., Pascal St. from Como Ave. to Arlington Ave., Arlington Ave. from Pascal St. to Hamline Ave., and Hamline Ave. from Arlington Ave. to Hoyt Ave.

November 1st: "Hamline-Cherokee" and "Grand-Mississippi".

Wabasha St.from 4th St. to Winifred St., Ohio St. from Winifred St. to George St., George St. from Ohio St. to Smith Ave., and Smith Ave. from George St. to Annapolis St.

Thomas Ave. from Como Ave. to Hamline Ave., Hamline Ave. from Thomas Ave. to Minnehaha Ave., Minnehaha Ave. from Hamline Ave. to Prior Ave., and Prior Ave. from Minnehaha Ave. to University Ave.

On Ramsey St., Oakland Ave., and Grand Ave. from W. 7th St. to Cretin Ave., and W. 7th St. from Ramsey St. to Wabasha St.

On Broadway St., Mississippi St., York Ave., Westminster St., Case Ave., Arkwright St., Brainerd Ave., Ivy Ave., and Payne Ave. from 5th St. to Nebraska Ave.

1953
MINNEAPOLIS ABANDONMENTS

The Minneapolis local lines were substantially abandoned during the year.

February 21st: "Bloomington-Columbia Heights".

Bloomington Ave. from Franklin Ave. to 54th St., and Central Ave. N.E. from E. Hennepin Ave. to 37th Ave. N.E.

April 14th: "Fort Snelling".

54th St. E. from 47th Ave. S. to the Fort Snelling right-of-way, and on the right-of-way to the Fort Snelling wye.

April 18th: "34th Ave. So." and "N. Washington".

Franklin Ave. from Bloomington Ave. to 4th Ave. S., Cedar Ave. from Lake St. to 42nd St., 42nd St. from Cedar Ave. to Hiawatha Ave./34th Ave. S., and on 34th Ave. S. to 54th St.

Washington Ave. N. from Hennepin Ave. to 42nd Ave. N.. Except cars pulling out of and into North Side Station at 26th Ave. N. used the trackage between there and Hennepin Ave. until July 11th, and cars on the "Plymouth-E. 25th St." line used the trackage between Plymouth Ave. and Hennepin Ave. until November 28th.

April 25th: "Oak St.".

Oak St. S.E. from Beacon St. to Fulton St., Fulton St. from Oak St. to Erie St., Erie St. from Fulton St. to Dartmouth Ave., Dartmouth Ave. from Erie St. to 27th Ave. S.E., and 27th Ave. S.E. from Dartmouth Ave. to Yale Ave. S.E.

July 10th: "Chicago-Penn-Fremont" (one car per week through November 27th).

Chicago Ave. from 8th Ave. S. to 54th St., 8th Ave. S. from Chicago Ave. to 6th St., 6th St. from 8th Ave. S. to 4th Ave. S., 2nd Ave. S. from 6th St. to 8th St., 8th St. from 2nd Ave. S. to 1st Ave. N. (eastbound and northbound tracks only on 6th St. or 8th St.).

From 8th St. N. and 1st Ave. N. on 8th St. N., 2nd Ave. N., 7th St. N. and Emerson Ave. N. to 33rd Ave. N., 33rd Ave. N. to Fremont Ave. N., and Fremont Ave. N. to 36th Ave. N.

Broadway Ave. W. from Washington Ave. N. to Penn Ave. N., Penn Ave. N. from Broadway Ave. to 38th Ave. N., 38th Ave. N. from Penn Ave. N. to Thomas Ave. N., and Thomas Ave. N. from 38th Ave. N. to 42nd Ave. N.

Because of franchise considerations with the City of Minneapolis, one car per week was operated over this trackage on Thursday nights through November 27th.

July 11th: "Selby-Lake" (one car per week through November 27th).

W. Lake St. and E. Lake St. from Hennepin Ave. to the Mississippi River bridge. Portions between Bryant Ave. and 36th Ave. S. were used by cars pulling out of and into Nicollet and Lake St. Stations until November 28th.

Because of franchise considerations with the City of Minneapolis one car per week was operated on Thursday nights between Hennepin Ave. S. and 36th Ave. S. through November 27th.

November 28th: "Minnehaha Falls", "Plymouth-E. 25th St.", "Bryant-Johnson", and "Interurban".

Riverside Ave. from Cedar Ave. to 27th Ave. S., 27th Ave. S. from Riverside Ave. to Minnehaha Ave., Minnehaha Ave. from 27th Ave. S. to the Minnehaha Falls loop at 51st St.; 42nd Ave. S. from Minnehaha Ave. to 54th St., 54th St. to the 47th Ave. S. wye.

Plymouth Ave. N. from Washington Ave. N. to Sheridan Ave. N.; Washington Ave. from Plymouth Ave. N. to Hennepin Ave.

Cedar Ave. S. from Washington Ave. to Minnehaha Ave., Minnehaha Ave. from Cedar Ave. to E. 25th St., E. 25th St. from Minnehaha Ave. to 36th Ave. S., 36th Ave. S. from E. 25th St. to 34th St., 34th St. from 36th Ave. S. to 42nd Ave. S., 42nd Ave. S. from 34th St. to 41st St., 41st St. from 42nd Ave. S. to 46th Ave. S., 46th Ave. S. from 41st St. to and across the Ford Bridge to the Ford Plant loop in St.Paul.

Lyndale Ave.S. from Hennepin Ave. to Lake St., Bryant Ave. from Lake St. to 56th St., 50th St. W. from Bryant Ave. to Penn Ave., and on Penn Ave. from 50th St. to 54th St.

8th St. S.E. from E. Hennepin Ave. to 10th Ave. S.E., 10th Ave. S.E. and Johnson St. from 8th St. S.E. to 33rd Ave. N.E.

From 5th Ave. N. and 5th St. N. on 5th St. N. and 5th St. S. to 5th Ave. S., 5th Ave. S. from 5th St. S. to Washington Ave. S., Washington Ave. S., from 5th Ave. S. to University Ave. S.E., and University Ave. S.E. from Washington Ave. S. E. to the Emerald St. S.E. wye. However the trackage from Hennepin Ave. on Washington Ave. and University Ave. continued to be used by cars going to and from the Snelling Shops until June, 1954.

1953
St.PAUL ABANDONMENTS

The three interurban lines were abandoned, ending streetcar service in St.Paul.

July 11th: "Selby-Lake" (entire line), and "Como-Harriet" (St.Paul segment only).

From the Mississippi River bridge on Marshall Ave. to Fairview Ave., Fairview Ave. from Marshall Ave. to Selby Avenue, Selby Avenue, through the Selby Tunnel to Kellogg Blvd. (3rd St.), to 4th St., and 4th St. to Broadway St.

From the Como Ave. and Eustis St. wye, on Como Ave., Van Slyke Ave., Chatsworth St., Front Ave., Como Ave., Rice St., to the intersection of Rice St. and University Ave. Cars operating on the Minneapolis segment wyed at Como Ave. and Eustis St. Trackage from Eustis St. to the State Fair Grounds on Como Ave. was used during the 1953 Minnesota State Fair, August 29th through September 7th.

October 31st: "Interurban" (St.Paul segment).

University Ave. from Emerald St. S.E. to Rice St., Rice St. to Wabasha St., Wabasha St. to 5th St., 5th St. to Robert St., Robert St. to 9th St., and 9th St. to Wabasha St. Cars operating on the Minneapolis segment wyed at University Ave. S.E. and Emerald St. S.E. Trackage on University Ave. from Emerald St. to the Snelling Shops was used for cars going to and from the shops until June, 1954.

1954
MINNEAPOLIS ABANDONMENTS

March 6th: "Glenwood-4th Ave. S.".

4th Ave. S. from 6th St. to 48th St., 6th St. from 4th Ave. S. to 1st Ave. N., 1st Ave. N. from 6th St. N. to 7th St. N., and Glenwood Ave. from 7th St. N. to Glenwood Park.

March 27th: "Nicollet-2nd St. N.E." and "Nicollet-Monroe".

Nicollet Ave. from Grant St. to 62nd St., Grant St. from Nicollet Ave. to Marquette Ave., Marquette Ave. from Grant St. to 1st St., 1st St. from Marquette Ave. to Hennepin Ave.

2nd St. N.E. from Hennepin Ave. to Lowry Ave. N.E., Lowry Ave. from 2nd St. N.E. to Grand St. N.E., Grand St. Lowry Ave. to 30th Ave. N.E.

E. Hennepin Ave. from 4th St. S.E. to Central Ave. S.E., Central Ave. to Monroe St., Monroe St. from Central Ave. to Broadway St. N.E., Broadway St. from Monroe St. to Washington St. N.E., Washington St. N.E. from Broadway St. to 27th Ave. N.E.

June 18th: University of Minnesota "Inter-Campus" line.

15th Ave. S.E. from 4th St. S.E. to the Main Campus loop. From Como Ave. and Eustis St. on private right-of-way to the Agricultural Campus. (At the request of MSR, the UofM Switch Car was last used during May 1953 due to the deteriorating condition of the track.)

June 19th: "Como-Harriet" and "Oak-Harriet".

Hennepin Ave. from 4th St. S.E. to 31st St. W., 31st St. to the Harriet right-of-way, the Harriet right-of-way to the Brookside loop.

Xerxes Ave. from the right-of-way (44th St.) to 50th St., and 50th St. from Xerxes Ave. to Penn Ave. S.

4th St. S.E. from E. Hennepin Ave. to 15th Ave. S.E., 15th Ave. S.E. from 4th St. S.E. to Como Ave., Como Ave. from 15th Ave. S.E. to the Como Ave. and Eustis St. wye (Inter-Campus line). 4th St. S.E. from 15th Ave. S.E. to Oak St. S.E., and Oak St. from 4th St. S.E. to the Beacon St. wye.

The last car was #1166, pulling into East Side Station at 1:34 a.m. on June 19th.

The very last streetcars to operate in Minneapolis and St.Paul streets after the abandonment were #1756 and #1767. Number 1756 left East Side Station for the Snelling Shops the Tuesday after abandonment. A few nights later #1767 made a midnight run from the Snelling Shops on University Ave. to Emerald St. S.E. and return on an electrical errand.

ABANDONMENTS
1932-1949

1932 Aug 11	Lake Minnetonka Division: Hopkins-Excelsior-Tonka Bay; Deephaven Jct.-Deephaven	
1932 Aug 11	Stillwater Division: Wildwood-Stillwater; Wildwood-White Bear; Stillwater Local lines	
1933 Sep 17	Lake Nokomis (Cedar Ave.)	Minneapolis
1938 Aug 27	St.Louis Park	Minneapolis
1938 Aug 27	Kenwood	Minneapolis
1938 Aug 27	Merriam Park	St. Paul
1938 Oct 29	Jackson-S. Robert	St.Paul
1939 Jun 29	Bryn Mawr	Minneapolis
1939 Dec 2	Hope St.	St.Paul
1940 May 25	6th Ave. N.	Minneapolis
1940 Nov 29	Franklin-11th St.	Minneapolis
1941 Aug 23	Western Ave.	St.Paul
1947 Aug 2	Bryant Ave. N.	Minneapolis
1947 Oct 11	Robbinsdale (north of 36th & France)	Minneapolis
1948 Jan 10	N.W. Terminal	Minneapolis
1948 Jan 24	Rondo-Stryker	St.Paul
1948 Jul 10	Robbinsdale (remainder)	Minneapolis
1948 Oct 30	Arcade-Dale-Forest, E. 7th St. to Maryland; Maryland, Forest to Kennard	St.Paul

ABANDONMENTS
1950-1954

1950 Apr 16	Broadway	Minneapolis
1950 Aug 19	28th Ave. S.	Minneapolis
1951 Jul 28	Columbia Heights (from 37th & Central)	Minneapolis
1951 Aug 4	Brookside to Hopkins	Lake Minnetonka Division
1951 Nov 3	Hazel Park-Mahtomedi	Stillwater Divsion
1952 May 3	Dale St.	St.Paul
1952 May 17	Fremont and 44th Ave's. N.	Minneapolis
1952 May 17	Randolph-Hazel Park	St.Paul
1952 May 17	Rice-South St.Paul	St.Paul
1952 May 17	Maria-Ft. Snelling	St.Paul
1952 Aug 1	Ft.Snelling Spur	Ft. Snelling
1952 Aug 11	France Ave., 44th to 54th	Minneapolis
1952 Aug 23	Various Streets from 15th Ave. S. and Franklin Ave. to 2nd Ave. S. and 4th St.	Minneapolis
1952 Sep 6	St.Clair-Payne-Phalen	St.Paul
1952 Sep 6	Snelling Ave.	St.Paul
1952 Oct 18	Grand Ave.	Minneapolis
1952 Nov 1	Hamline-Cherokee	St.Paul
1952 Nov 1	Grand-Mississippi	St.Paul
1953 Feb 21	Bloomington-Columbia Heights (to 37th & Central)	Mpls.
1953 Apr 14	Minnehaha Falls to Ft. Snelling	Minneapolis, Ft. Snell.
1953 Apr 18	34th Ave. S.-N. Washington	Minneapolis
1953 Apr 25	Oak-Harriet line south of Oak and Beacon Sts.	Minneapolis
1953 Jul 10	Chicago-Penn-Fremont (remainder of Fremont)	Minneapolis
1953 Jul 11	Selby-Lake	Minneapolis and St.Paul
1953 Jul 11	Como-Harriet Line in St.Paul except for State Fair Week Aug 29 to Sep 7	St.Paul
1953 Oct 31	Interurban Line in St.Paul	St.Paul
1953 Nov 28	Interurban Line in Minneapolis	Minneapolis
1953 Nov 28	Bryant-Johnson	Minneapolis
1953 Nov 28	Minnehaha Falls	Minneapolis
1953 Nov 28	Plymouth-E.25th St.	Minneapolis
1954 Mar 6	Glenwood-4th Ave. S.	Minneapolis
1954 Mar 27	Nicollet-2nd St.N.E.	Minneapolis
1954 Mar 27	Nicollet-Monroe	Minneapolis
1954 Jun 19	Inter-Campus	Minneapolis and St.Paul
1954 Jun 19	Oak-Harriet (remainder)	Minneapolis
1954 Jun 19	Como-Harriet	Minneapolis
1954 Jun 19	France Ave. to Brookside	Lake Minnetonka Div.

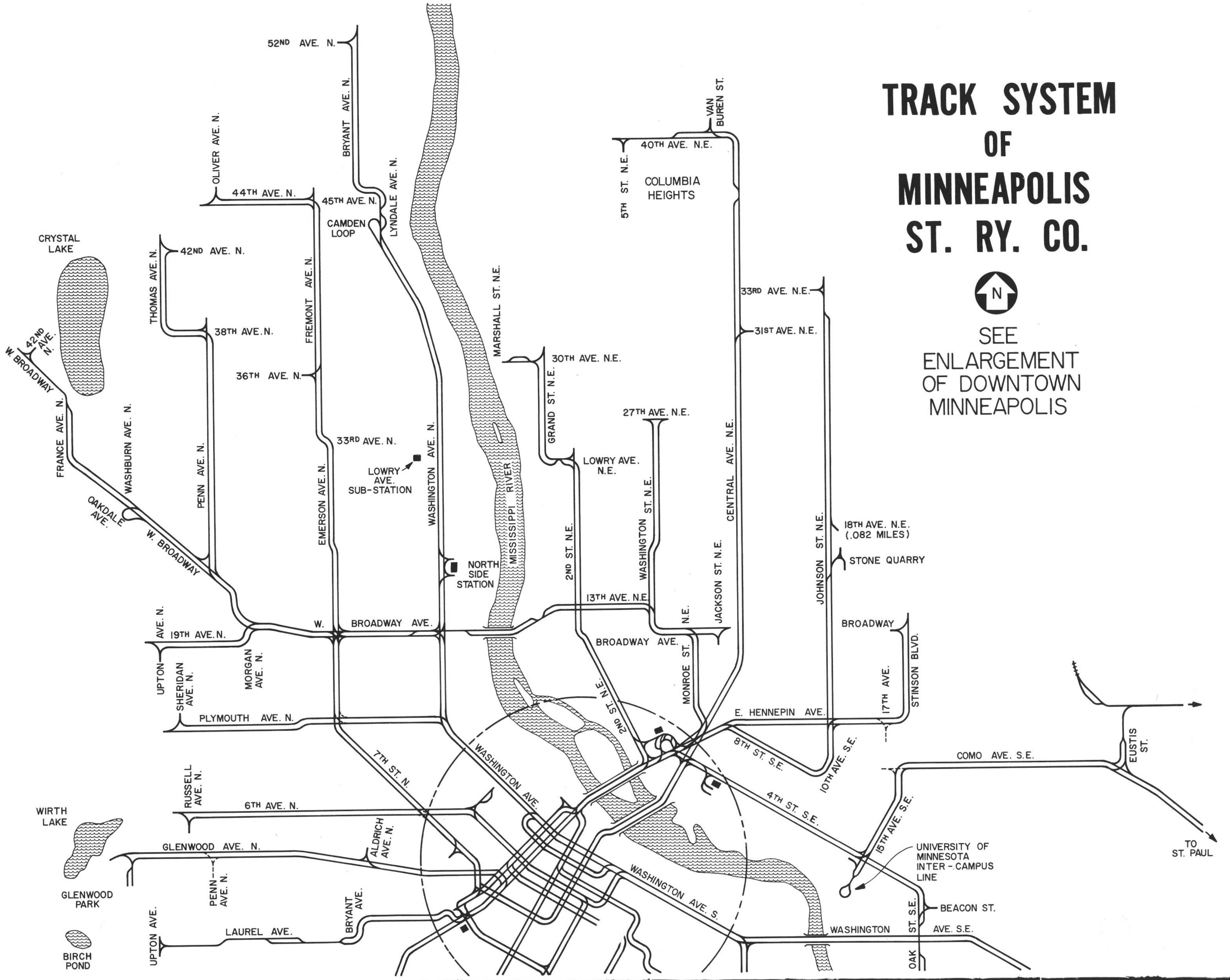
AVERY® POLY VU

Track Mileage

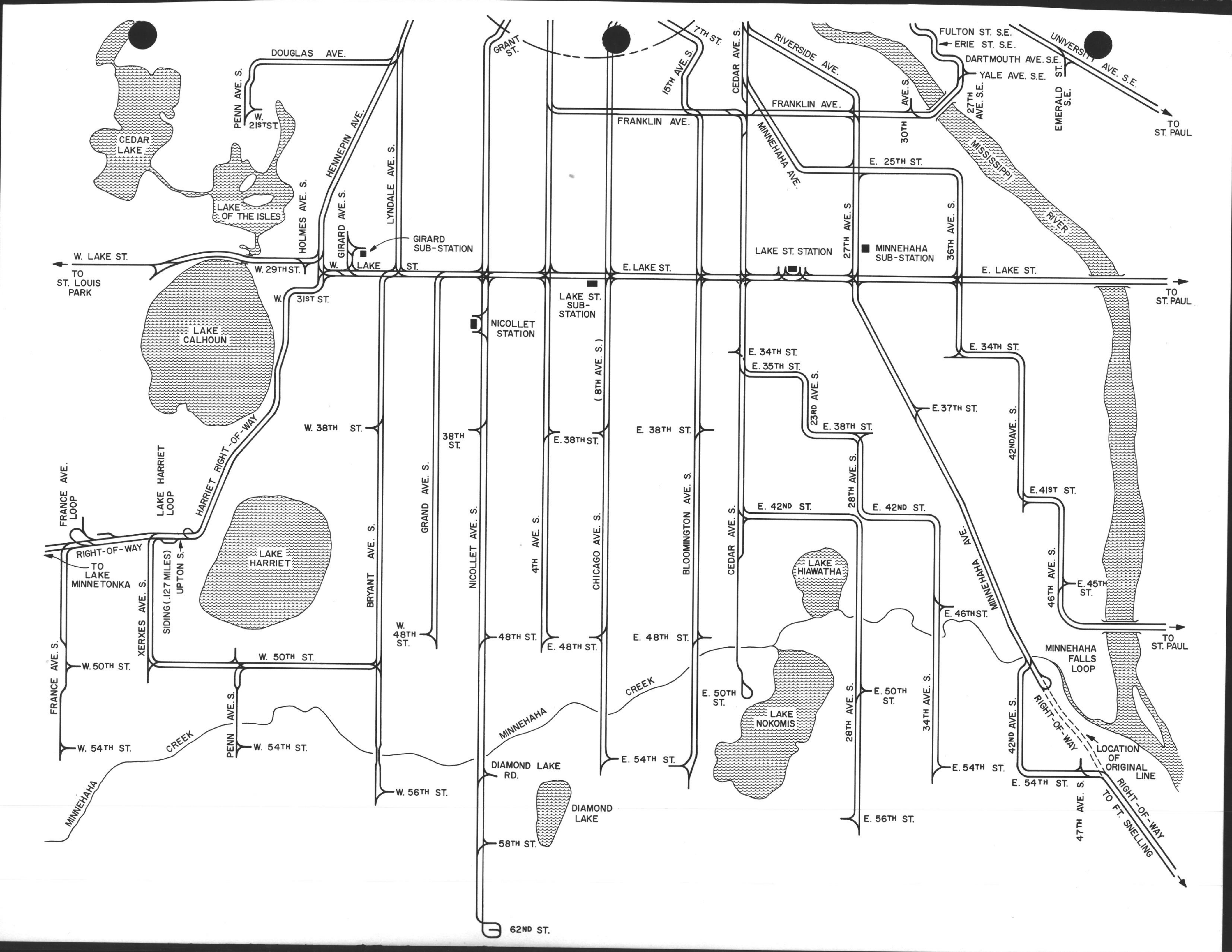
Summary of Construction

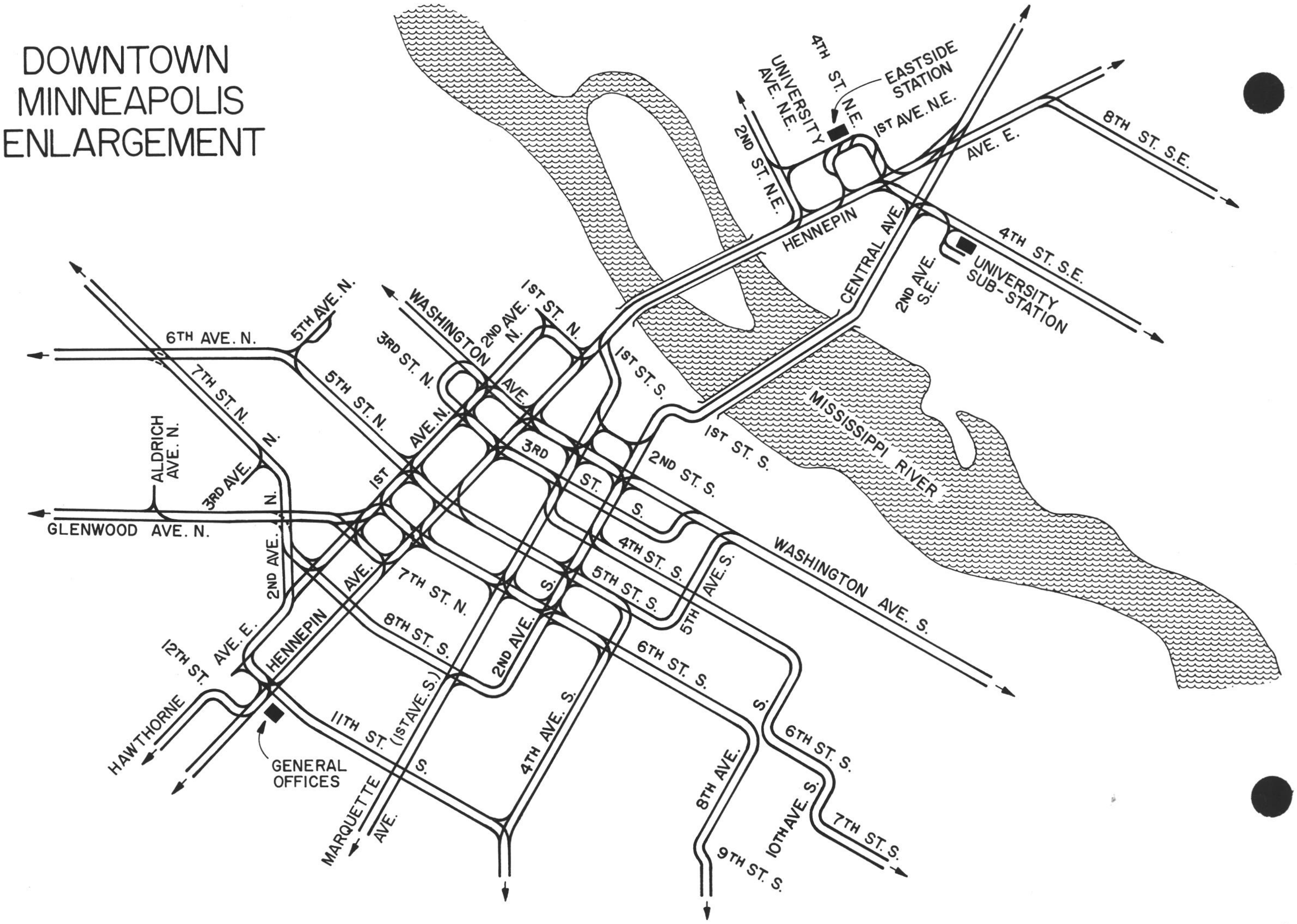
Details

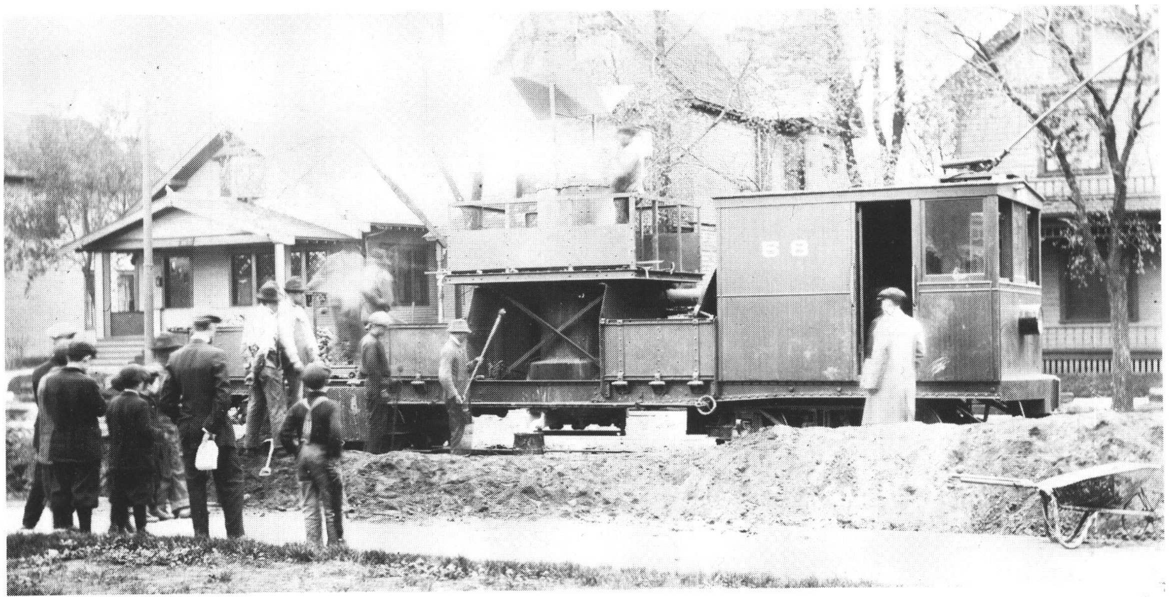
TRACK SYSTEM OF MINNEAPOLIS ST. RY. CO.


N
SEE ENLARGEMENT OF DOWNTOWN MINNEAPOLIS
52ND AVE. N.
BRYANT AVE. N.
OLIVER AVE. N.
44TH AVE. N.
45TH AVE. N.
LYNDALE AVE. N.
CAMDEN LOOP
CRYSTAL LAKE
THOMAS AVE. N.
42ND AVE. N.
38TH AVE. N.
FREMONT AVE. N.
36TH AVE. N.
42ND AVE. N.
W. BROADWAY
FRANCE AVE. N.
WASHBURN AVE. N.
PENN AVE. N.
33RD AVE. N.
LOWRY AVE. SUB-STATION
WASHINGTON AVE. N.
EMERSON AVE. N.
OAKDALE AVE.
W. BROADWAY
NORTH SIDE STATION
MISSISSIPPI RIVER
MARSHALL ST. N.E.
30TH AVE. N.E.
GRAND ST. N.E.
LOWRY AVE. N.E.
2ND ST. N.E.
13TH AVE. N.E.
WASHINGTON ST. N.E.
27TH AVE. N.E.
5TH ST. N.E.
40TH AVE. N.E.
VAN BUREN ST.
COLUMBIA HEIGHTS
33RD AVE. N.E.
31ST AVE. N.E.
CENTRAL AVE. N.E.
JACKSON ST. N.E.
JOHNSON ST. N.E.
18TH AVE. N.E. (.082 MILES)
STONE QUARRY
BROADWAY
STINSON BLVD.
17TH AVE.
W. BROADWAY AVE.
UPTON AVE. N.
19TH AVE. N.
SHERIDAN AVE. N.
MORGAN AVE. N.
BROADWAY AVE.
N.E.
MONROE ST.
2ND ST. N.E.
PLYMOUTH AVE. N.
E. HENNEPIN AVE.
8TH ST. S.E.
10TH AVE. S.E.
EUSTIS ST.
COMO AVE. S.E.
7TH ST. N.
WASHINGTON AVE.
RUSSELL AVE. N.
6TH AVE. N.
4TH ST. S.E.
15TH AVE. S.E.
TO ST. PAUL
WIRTH LAKE
GLENWOOD AVE. N.
ALDRICH AVE. N.
UNIVERSITY OF MINNESOTA INTER-CAMPUS LINE
GLENWOOD PARK
PENN AVE. N.
WASHINGTON AVE. S.
BEACON ST.
UPTON AVE.
LAUREL AVE.
BRYANT AVE.
WASHINGTON AVE. S.E.
OAK ST. S.E.
BIRCH POND

AVERY®
POLY VU

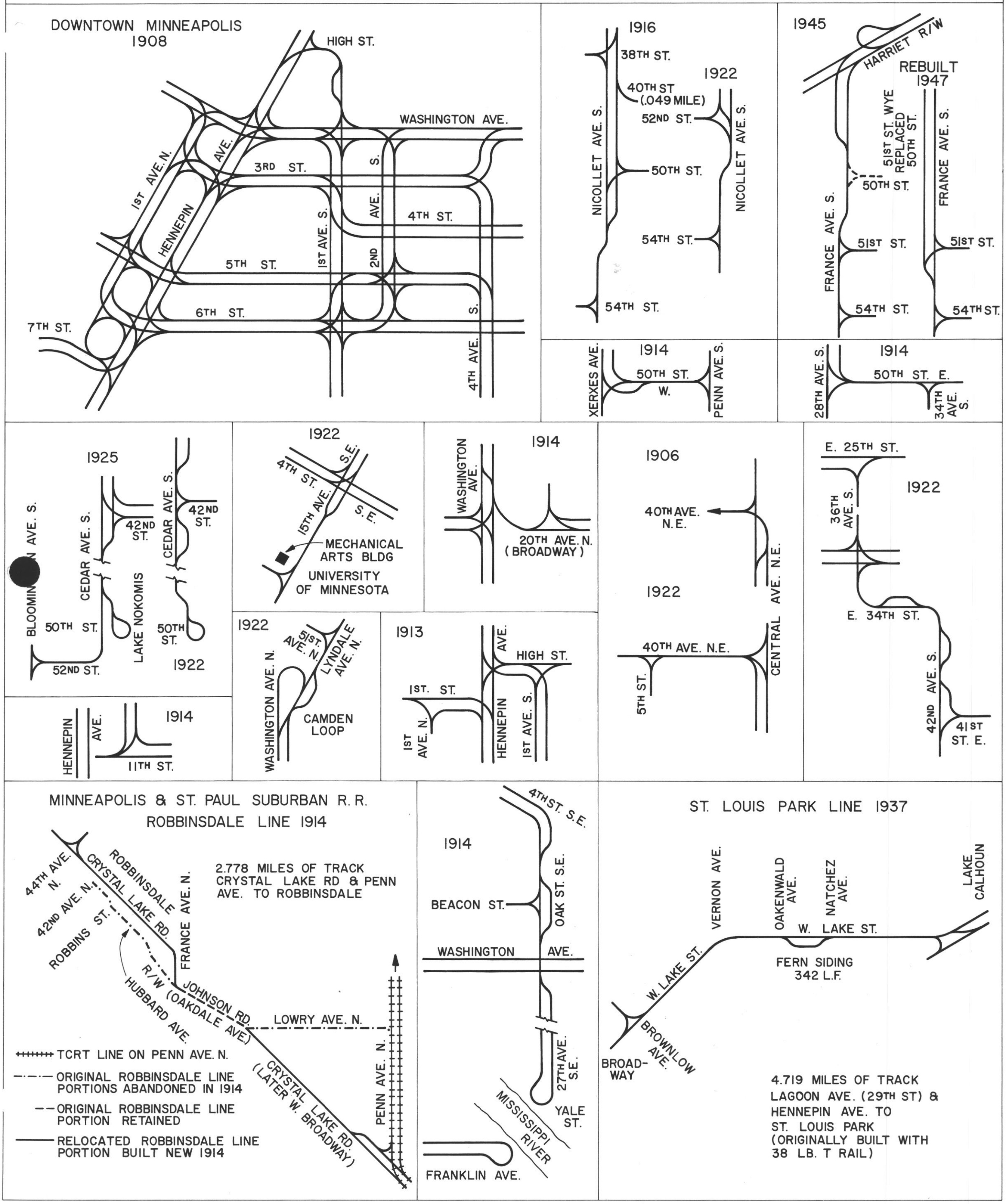

DOUGLAS AVE.
PENN AVE. S.
W. 21ST ST.
CEDAR LAKE
LAKE OF THE ISLES
HOLMES AVE. S.
HENNEPIN AVE.
GIRARD AVE. S.
LYNDALE AVE. S.
GIRARD SUB-STATION
W. LAKE ST.
TO ST. LOUIS PARK
W. 29TH ST.
W. LAKE ST.
W. 31ST ST.
LAKE CALHOUN
GRANT ST.
7TH ST.
15TH AVE. S.
CEDAR AVE. S.
RIVERSIDE AVE.
FULTON ST. S.E.
ERIE ST. S.E.
DARTMOUTH AVE. S.E.
YALE AVE. S.E.
UNIVERSITY AVE. S.E.
EMERALD ST. S.E.
27TH AVE. S.E.
30TH AVE. S.
TO ST. PAUL
FRANKLIN AVE.
FRANKLIN AVE.
MINNEHAHA AVE.
MISSISSIPPI RIVER
E. 25TH ST.
27TH AVE. S.
MINNEHAHA SUB-STATION
36TH AVE. S.
LAKE ST. STATION
E. LAKE ST.
E. LAKE ST.
TO ST. PAUL
LAKE ST. SUB-STATION
NICOLLET STATION
(8TH AVE. S.)
E. 34TH ST.
E. 35TH ST.
E. 34TH ST.
23RD AVE. S.
E. 37TH ST.
42ND AVE. S.
W. 38TH ST.
38TH ST.
E. 38TH ST.
E. 38TH ST.
E. 38TH ST.
HARRIET RIGHT-OF-WAY
FRANCE AVE. LOOP
LAKE HARRIET LOOP
GRAND AVE. S.
BRYANT AVE. S.
NICOLLET AVE. S.
4TH AVE. S.
CHICAGO AVE. S.
BLOOMINGTON AVE. S.
CEDAR AVE. S.
E. 42ND ST.
28TH AVE. S.
E. 42ND ST.
E. 41ST ST.
RIGHT-OF-WAY
TO LAKE MINNETONKA
UPTON S.
SIDING (.127 MILES)
XERXES AVE. S.
LAKE HARRIET
LAKE HIAWATHA
MINNEHAHA AVE.
46TH AVE. S.
E. 45TH ST.
E. 46TH ST.
TO ST. PAUL
W. 48TH ST.
48TH ST.
E. 48TH ST.
E. 48TH ST.
FRANCE AVE. S.
W. 50TH ST.
W. 50TH ST.
MINNEHAHA FALLS LOOP
E. 50TH ST.
E. 50TH ST.
34TH AVE. S.
LAKE NOKOMIS
28TH AVE. S.
42ND AVE. S.
RIGHT-OF-WAY
LOCATION OF ORIGINAL LINE
MINNEHAHA CREEK
MINNEHAHA CREEK
PENN AVE. S.
W. 54TH ST.
W. 54TH ST.
DIAMOND LAKE RD.
E. 54TH ST.
E. 54TH ST.
E. 54TH ST.
47TH AVE. S.
RIGHT-OF-WAY
TO FT. SNELLING
W. 56TH ST.
DIAMOND LAKE
E. 56TH ST.
58TH ST.
62ND ST.


DOWNTOWN MINNEAPOLIS ENLARGEMENT
EASTSIDE STATION
4TH ST. N.E.
UNIVERSITY AVE. N.E.
2ND ST. N.E.
1ST AVE. N.E.
8TH ST. S.E.
AVE. E.
HENNEPIN
CENTRAL AVE.
4TH ST. S.E.
UNIVERSITY SUB-STATION
2ND AVE. S.E.
MISSISSIPPI RIVER
WASHINGTON AVE. N.
2ND AVE. N.
1ST ST. N.
3RD ST. N.
1ST ST. S.
1ST ST. S.
2ND ST. S.
6TH AVE. N.
5TH AVE. N.
7TH ST. N.
5TH ST. N.
ALDRICH AVE. N.
3RD AVE. N.
GLENWOOD AVE. N.
1ST AVE. N.
3RD ST. S.
4TH ST. S.
5TH ST. S.
5TH AVE. S.
WASHINGTON AVE. S.
2ND AVE. N.
HENNEPIN AVE.
7TH ST. N.
8TH ST. S.
2ND AVE. S.
6TH ST. S.
12TH ST. AVE. E.
HAWTHORNE
GENERAL OFFICES
11TH ST. (1ST AVE. S.)
MARQUETTE AVE. S.
4TH AVE. S.
8TH AVE. S.
6TH ST. S.
10TH AVE. S.
7TH ST. S.
9TH ST. S.



A Cupola car in operation producing molten metal (using thermite) for cast welded rail joints. The spectators on the sidewalk seem fascinated by the process. (TCRT)

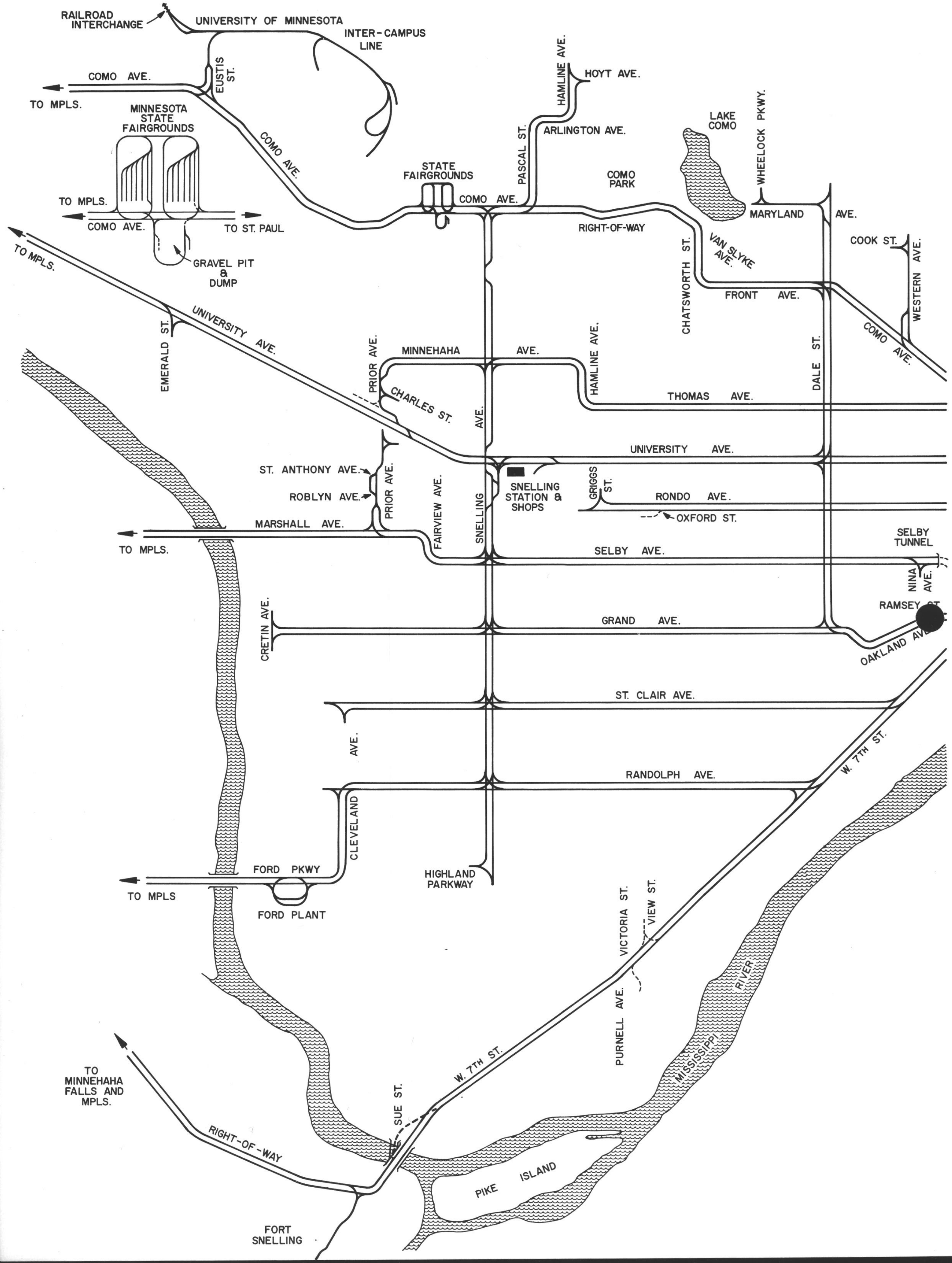
MINNEAPOLIS MISCELLANEOUS TRACKAGE DETAILS 1906-1947

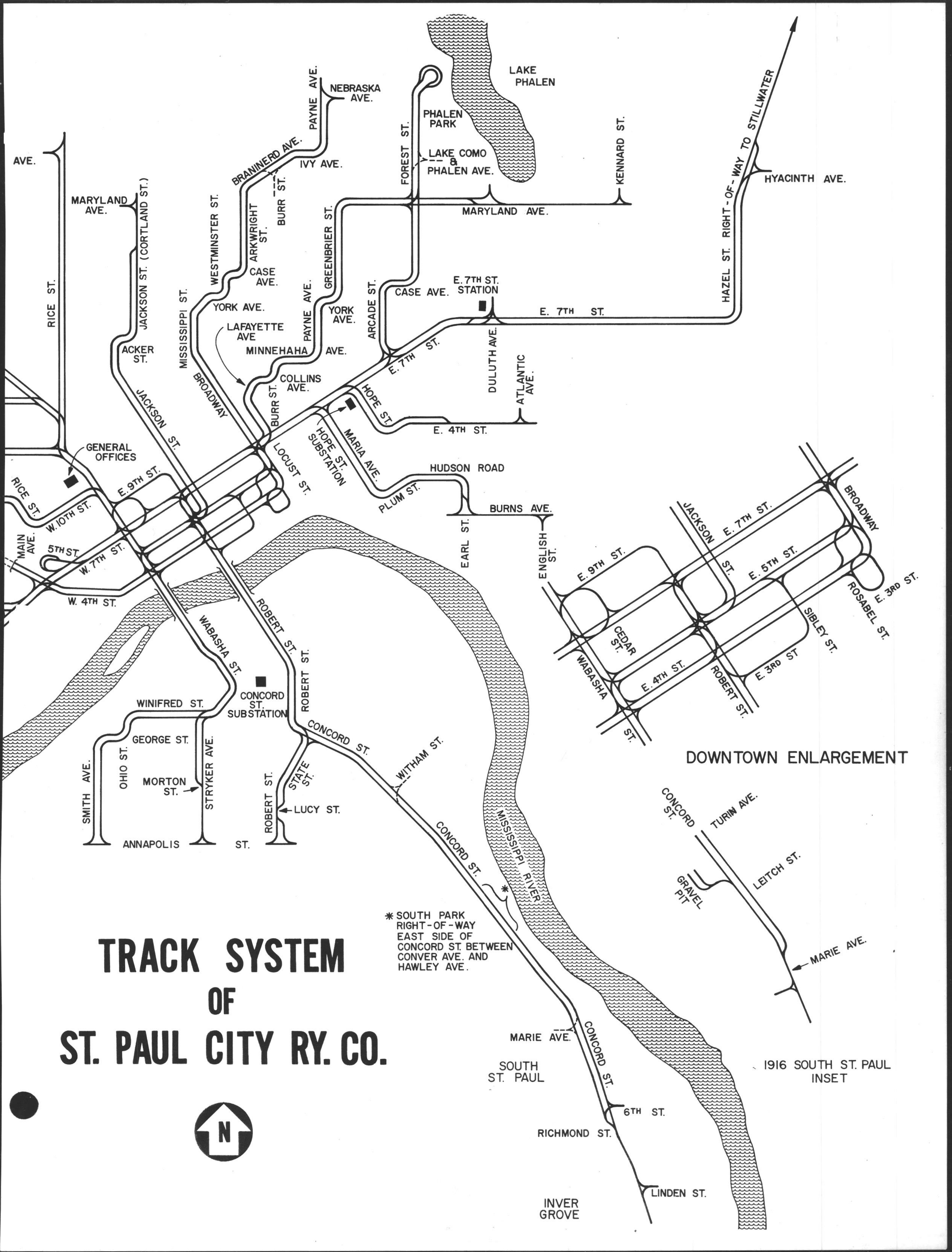

DOWNTOWN MINNEAPOLIS
1908
HIGH ST.
WASHINGTON AVE.
1ST AVE. N.
HENNEPIN
AVE.
3RD ST.
4TH ST.
5TH ST.
6TH ST.
7TH ST.
1ST AVE. S.
2ND
AVE.
S.
4TH AVE.
S.
1916
38TH ST.
40TH ST
(.049 MILE)
50TH ST.
54TH ST.
54TH ST.
NICOLLET AVE. S.
1922
52ND ST.
54TH ST.
NICOLLET AVE. S.
1945
HARRIET R/W
REBUILT
1947
51ST ST. WYE
REPLACED
50TH ST.
50TH ST.
FRANCE AVE. S.
51ST ST.
54TH ST.
FRANCE AVE. S.
51ST ST.
54TH ST.
1914
XERXES AVE.
50TH ST.
W.
PENN AVE. S.
1914
28TH AVE. S.
50TH ST. E.
34TH AVE. S.
1925
BLOOMINGTON AVE. S.
CEDAR AVE. S.
42ND ST.
50TH ST.
52ND ST.
LAKE NOKOMIS
CEDAR AVE. S.
42ND ST.
50TH ST.
1922
1922
4TH ST.
S.E.
15TH AVE.
S.E.
MECHANICAL ARTS BLDG
UNIVERSITY OF MINNESOTA
1914
WASHINGTON AVE.
20TH AVE. N.
(BROADWAY)
1906
40TH AVE.
N.E.
1922
40TH AVE. N.E.
5TH ST.
CENTRAL AVE. N.E.
E. 25TH ST.
1922
36TH AVE. S.
E. 34TH ST.
42ND AVE. S.
41ST ST. E.
1914
HENNEPIN
AVE.
11TH ST.
1922
51ST AVE. N.
LYNDALE AVE. N.
WASHINGTON AVE. N.
CAMDEN LOOP
1913
AVE.
HIGH ST.
1ST. ST.
1ST AVE. N.
HENNEPIN
1ST AVE. S.
MINNEAPOLIS & ST. PAUL SUBURBAN R.R.
ROBBINSDALE LINE 1914
44TH AVE. N.
ROBBINSDALE
CRYSTAL LAKE RD.
42ND AVE. N.
ROBBINS ST.
FRANCE AVE. N.
R/W (OAKDALE AVE.)
HUBBARD AVE.
JOHNSON RD.
LOWRY AVE. N.
CRYSTAL LAKE RD.
(LATER W. BROADWAY)
PENN AVE. N.
1914
4TH ST. S.E.
BEACON ST.
OAK ST. S.E.
WASHINGTON
AVE.
27TH AVE. S.E.
YALE ST.
MISSISSIPPI RIVER
FRANKLIN AVE.
ST. LOUIS PARK LINE 1937
VERNON AVE.
OAKENWALD AVE.
NATCHEZ AVE.
LAKE CALHOUN
W. LAKE ST.
W. LAKE ST.
FERN SIDING
342 L.F.
BROWNLOW AVE.
BROAD-WAY

2.778 MILES OF TRACK CRYSTAL LAKE RD & PENN AVE. TO ROBBINSDALE

- TCRT LINE ON PENN AVE. N.
- ORIGINAL ROBBINSDALE LINE PORTIONS ABANDONED IN 1914
- ORIGINAL ROBBINSDALE LINE PORTION RETAINED
- RELOCATED ROBBINSDALE LINE PORTION BUILT NEW 1914

4.719 MILES OF TRACK LAGOON AVE. (29TH ST) & HENNEPIN AVE. TO ST. LOUIS PARK (ORIGINALLY BUILT WITH 38 LB. T RAIL)

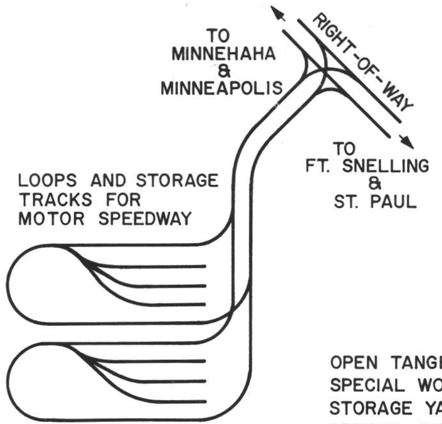

RAILROAD INTERCHANGE
UNIVERSITY OF MINNESOTA
INTER-CAMPUS LINE
EUSTIS ST.
COMO AVE.
TO MPLS.
MINNESOTA STATE FAIRGROUNDS
COMO AVE.
TO MPLS.
COMO AVE.
TO ST. PAUL
GRAVEL PIT & DUMP
STATE FAIRGROUNDS
COMO AVE.
HAMLINE AVE.
HOYT AVE.
PASCAL ST.
ARLINGTON AVE.
LAKE COMO
WHEELOCK PKWY.
COMO PARK
MARYLAND
AVE.
RIGHT-OF-WAY
CHATSWORTH ST.
VAN SLYKE AVE.
COOK ST.
WESTERN AVE.
FRONT AVE.
COMO AVE.
TO MPLS.
UNIVERSITY AVE.
EMERALD ST.
PRIOR AVE.
MINNEHAHA
AVE.
HAMLINE AVE.
DALE ST.
CHARLES ST.
THOMAS AVE.
AVE.
UNIVERSITY AVE.
ST. ANTHONY AVE.
ROBLYN AVE.
PRIOR AVE.
FAIRVIEW AVE.
SNELLING
SNELLING STATION & SHOPS
GRIGGS ST.
RONDO AVE.
OXFORD ST.
TO MPLS.
MARSHALL AVE.
SELBY AVE.
SELBY TUNNEL
NINA AVE.
RAMSEY ST.
CRETIN AVE.
GRAND AVE.
OAKLAND AVE.
ST. CLAIR AVE.
AVE.
W. 7TH ST.
RANDOLPH AVE.
CLEVELAND
TO MPLS
FORD PKWY
FORD PLANT
HIGHLAND PARKWAY
VICTORIA ST.
VIEW ST.
PURNELL AVE.
MISSISSIPPI RIVER
TO MINNEHAHA FALLS AND MPLS.
RIGHT-OF-WAY
SUE ST.
W. 7TH ST.
PIKE ISLAND
FORT SNELLING


LAKE PHALEN
PHALEN PARK
NEBRASKA AVE.
PAYNE AVE.
BRAINERD AVE.
IVY AVE.
BURR ST.
LAKE COMO & PHALEN AVE.
FOREST ST.
KENNARD ST.
HAZEL ST. RIGHT-OF-WAY TO STILLWATER
HYACINTH AVE.
AVE.
MARYLAND AVE.
JACKSON ST. (CORTLAND ST.)
RICE ST.
WESTMINSTER ST.
ARKWRIGHT ST.
CASE AVE.
GREENBRIER ST.
MARYLAND AVE.
YORK AVE.
PAYNE AVE.
YORK AVE.
ARCADE ST.
CASE AVE.
E. 7TH ST. STATION
E. 7TH ST.
MISSISSIPPI ST.
LAFAYETTE AVE
MINNEHAHA AVE.
ACKER ST.
COLLINS AVE.
E. 7TH ST.
DULUTH AVE.
ATLANTIC AVE.
JACKSON ST.
BROADWAY
BURR ST.
HOPE ST.
E. 4TH ST.
HOPE ST. SUBSTATION
MARIA AVE.
GENERAL OFFICES
LOCUST ST.
HUDSON ROAD
RICE ST.
E. 9TH ST.
PLUM ST.
BURNS AVE.
W. 10TH ST.
EARL ST.
ENGLISH ST.
MAIN AVE.
5TH ST.
W. 7TH ST.
W. 4TH ST.
ROBERT ST.
WABASHA ST.
ROBERT ST.
CONCORD ST. SUBSTATION
WINIFRED ST.
GEORGE ST.
OHIO ST.
SMITH AVE.
MORTON ST.
STRYKER AVE.
ROBERT ST.
STATE ST.
LUCY ST.
ANNAPOLIS ST.
CONCORD ST.
WITHAM ST.
CONCORD ST.
MISSISSIPPI RIVER
MARIE AVE.
CONCORD ST.
SOUTH ST. PAUL
6TH ST.
RICHMOND ST.
LINDEN ST.
INVER GROVE
N
BROADWAY
JACKSON ST.
E. 7TH ST.
E. 9TH ST.
E. 5TH ST.
E. 3RD ST.
ROSABEL ST.
CEDAR ST.
SIBLEY ST.
WABASHA ST.
E. 4TH ST.
ROBERT ST.
E. 3RD ST
DOWNTOWN ENLARGEMENT
CONCORD ST.
TURIN AVE.
LEITCH ST.
GRAVEL PIT
MARIE AVE.
1916 SOUTH ST. PAUL INSET

* SOUTH PARK RIGHT-OF-WAY EAST SIDE OF CONCORD ST. BETWEEN CONVER AVE. AND HAWLEY AVE.

TRACK SYSTEM
OF
ST. PAUL CITY RY. CO.

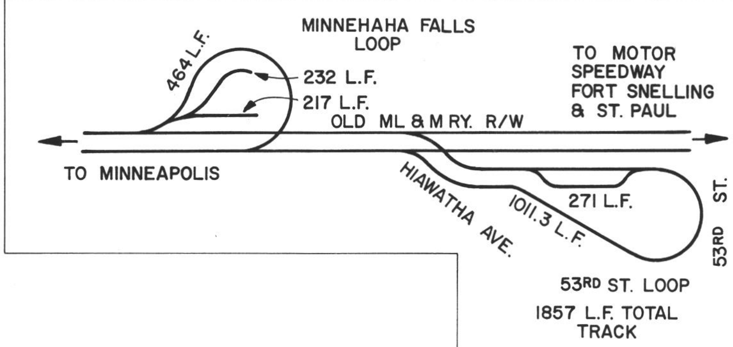
MINNEAPOLIS - MINNEHAHA FALLS - FT. SNELLING RIGHT-OF-WAY TRACKAGE DETAILS


TO MINNEHAHA & MINNEAPOLIS
RIGHT-OF-WAY
TO FT. SNELLING & ST. PAUL
LOOPS AND STORAGE TRACKS FOR MOTOR SPEEDWAY

OPEN TANGENT TRACK	12320.6 L.F.
SPECIAL WORK (BRANCH OFF)	808.8 L.F.
STORAGE YARD TANGENT TRACKS	9706.5 L.F.
SPECIAL WORK - MINNEAPOLIS LOOP	820.4 L.F.
SPECIAL WORK - ST. PAUL LOOP	633.6 L.F.
SPECIAL WORK - EAST END LOOP	753.9 L.F.
TOTAL	25043.8 L.F.

OR
4.743 MILES OF TRACK

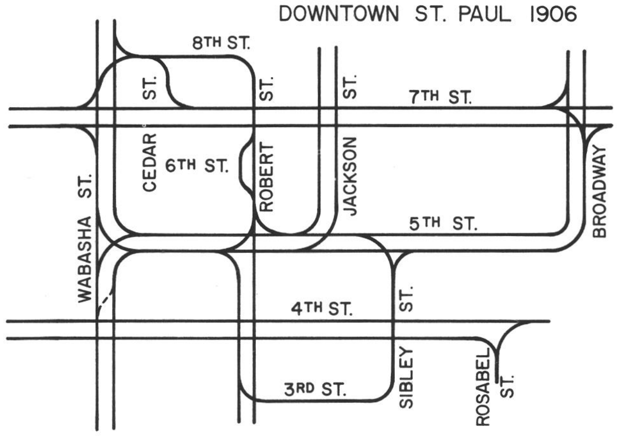
1915 - 1917


MINNEHAHA FALLS LOOP
464 L.F.
232 L.F.
217 L.F.
OLD ML & M RY. R/W
TO MOTOR SPEEDWAY FORT SNELLING & ST. PAUL
TO MINNEAPOLIS
HIAWATHA AVE.
1011.3 L.F.
271 L.F.
53RD ST.
53RD ST. LOOP
1857 L.F. TOTAL TRACK

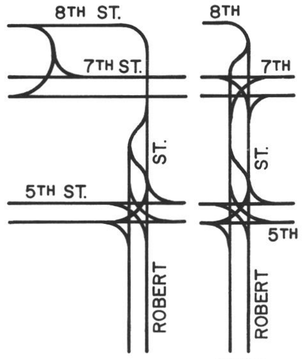
1915

ST. PAUL MISCELLANEOUS TRACKAGE DETAILS 1898 - 1938

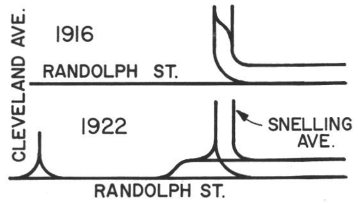
DOWNTOWN ST. PAUL 1906

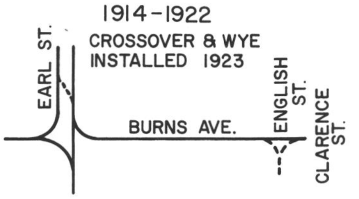

8TH ST.
CEDAR ST.
ROBERT ST.
JACKSON ST.
7TH ST.
6TH ST.
WABASHA ST.
5TH ST.
BROADWAY
4TH ST.
SIBLEY ST.
3RD ST.
ROSABEL ST.

ROBERT ST. DEVELOPMENT

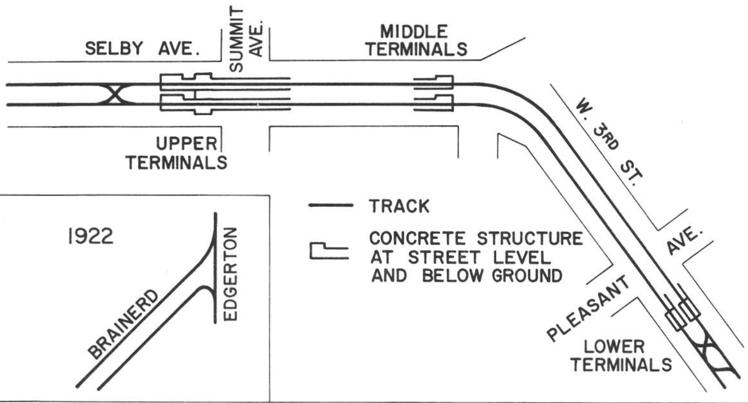

8TH ST.
7TH ST.
5TH ST.
ROBERT ST.
8TH
7TH
5TH
ROBERT ST.

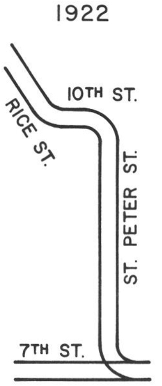
1922


1916
CLEVELAND AVE.
RANDOLPH ST.
1922
SNELLING AVE.
RANDOLPH ST.

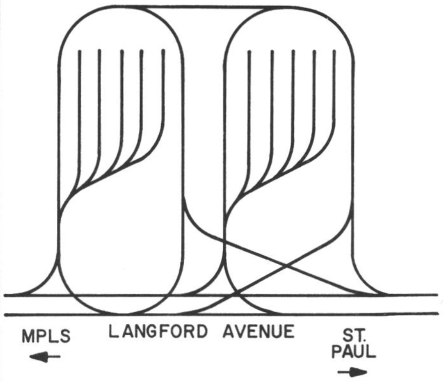

1914 - 1922
EARL ST.
CROSSOVER & WYE INSTALLED 1923
ENGLISH ST.
BURNS AVE.
CLARENCE ST.

SELBY HILL COUNTERWEIGHT SYSTEM 1898

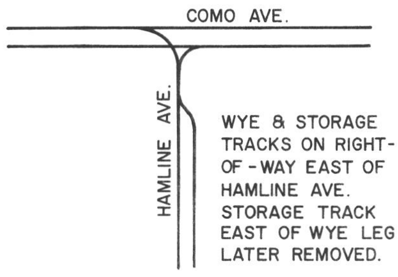

SELBY AVE.
SUMMIT AVE.
MIDDLE TERMINALS
UPPER TERMINALS
W. 3RD ST.
AVE.
PLEASANT
LOWER TERMINALS
TRACK
CONCRETE STRUCTURE AT STREET LEVEL AND BELOW GROUND
1922
BRAINERD
EDGERTON


1922
RICE ST.
10TH ST.
ST. PETER ST.
7TH ST.

FAIR GROUNDS 1907

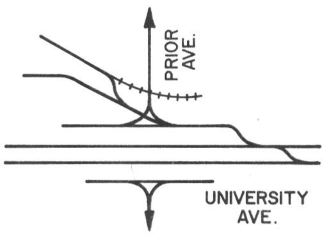

MPLS
LANGFORD AVENUE
ST. PAUL

1922 COMO PARK

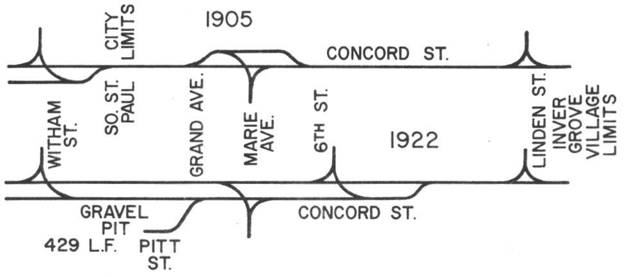

COMO AVE.
HAMLINE AVE.

WYE & STORAGE TRACKS ON RIGHT-OF-WAY EAST OF HAMLINE AVE. STORAGE TRACK EAST OF WYE LEG LATER REMOVED.

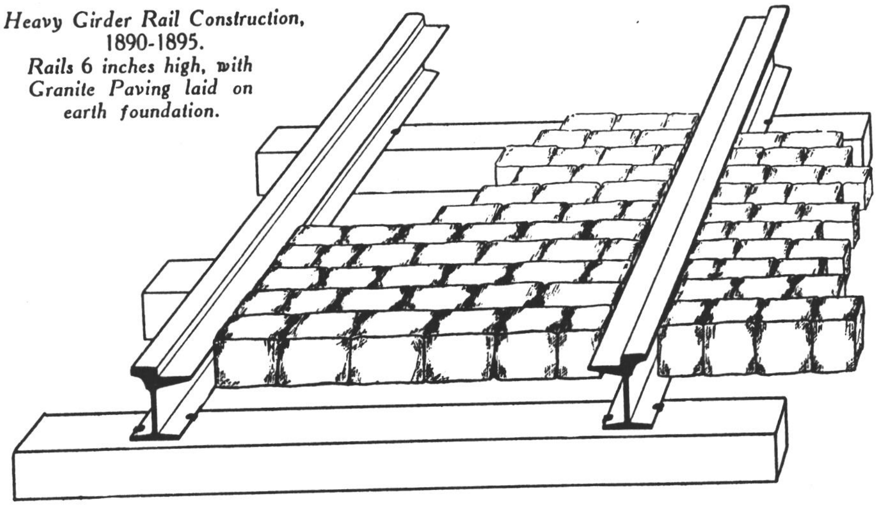
INTERSECTION OF PRIOR AVE. UNIVERSITY AVE. 1937 - 1938

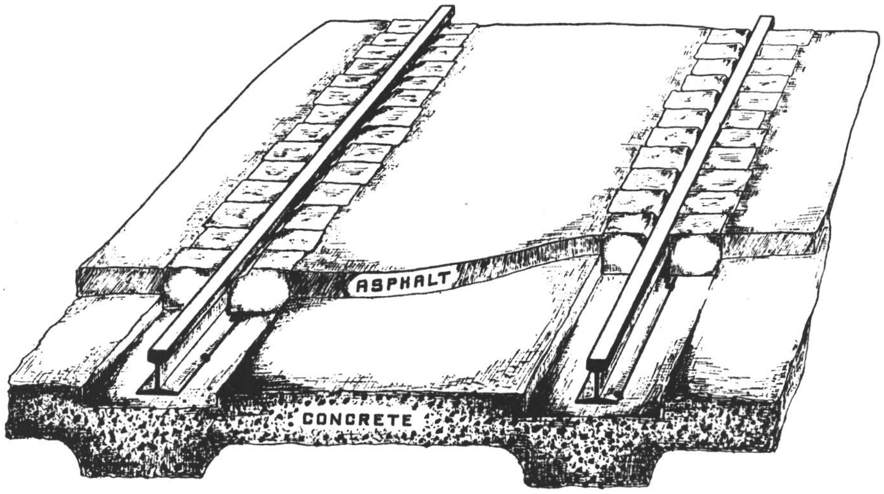

PRIOR AVE.
UNIVERSITY AVE.

SOUTH ST. PAUL - INVER GROVE LINE


1905
CITY LIMITS
CONCORD ST.
WITHAM ST.
SO. ST. PAUL
GRAND AVE.
MARIE AVE.
6TH ST.
1922
LINDEN ST.
INVER GROVE VILLAGE LIMITS
GRAVEL PIT 429 L.F.
PITT ST.
CONCORD ST.

Heavy Girder Rail Construction,
1890-1895.
Rails 6 inches high, with
Granite Paving laid on
earth foundation.




ASPHALT
CONCRETE

Track Construction in Minneapolis from 1896 to 1902.
Rails embedded in concrete with asphalt paving on concrete foundation.
Ties spaced 10 feet apart.

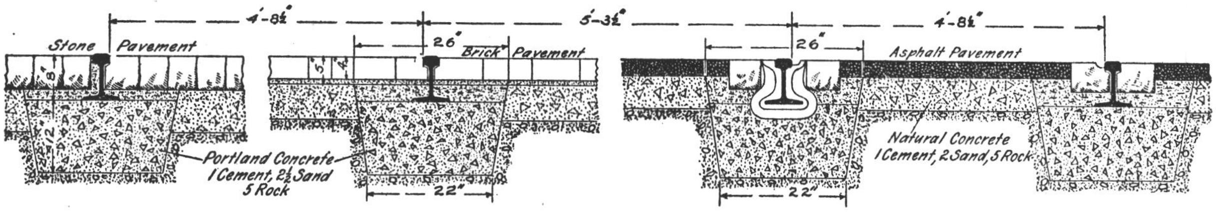
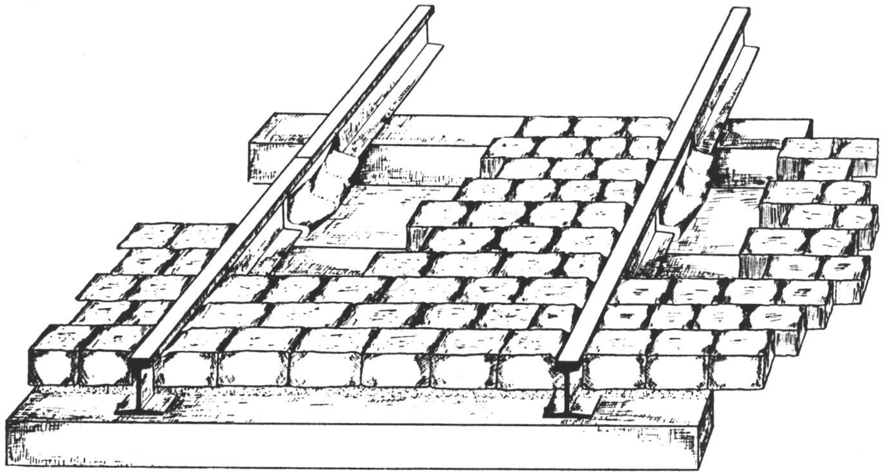
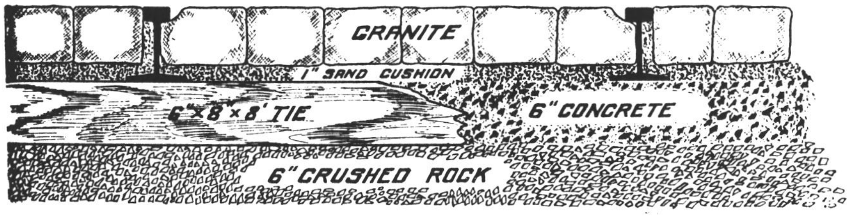

4'-8½"
5'-3½"
4'-8½"
Stone Pavement
26"
Brick Pavement
26"
Asphalt Pavement
8"
12"
5"
4"
Portland Concrete
1 Cement, 2½ Sand
5 Rock
22"
Natural Concrete
1 Cement, 2 Sand, 5 Rock
22"

FIG. 35

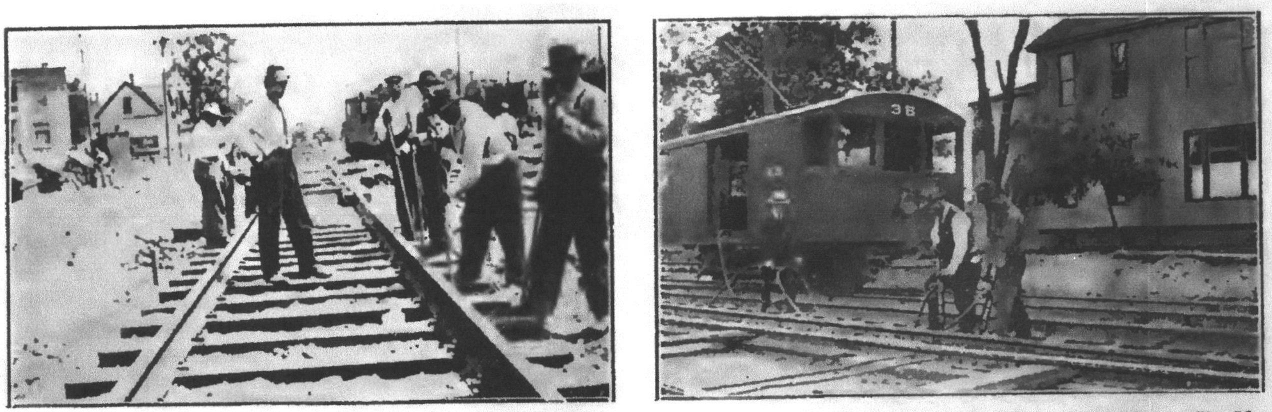
AVERY POLY-VU



Standard Track Construction in Minneapolis Today.


GRANITE
1" SAND CUSHION
6"×8"×8' TIE
6" CONCRETE
6" CRUSHED ROCK

Sectional View of Present Track Construction.



Pneumatic Tie Tamping—Figs. 5 and 6—Tamping Sand and Gravel Ballast, Twin City Traction Lines, Minneapolis, Minn.—Six Men Hand-Tamping Replaced by Two Men with Machines

ERJ 9-23-1916

TRACK MILEAGE RECORDS

FRANK TRUMBULL'S FIRST INSPECTION
January 18, 1893

		Minneapolis	St.Paul	Total
Electric		114.413 miles	85.050 miles	199.463 miles
Cable:	Selby Ave.		5.782 miles	
	E. 7th St.		5.370 miles	
	Total		11.152 miles	11.152 miles
Total		114.413 miles	96.202 miles	210.615 miles

1894 DIRECTORY

	Minneapolis	St.Paul	Total
Electric	122.373 miles	93.632 miles	216.005 miles
Cable: Selby Ave.		5.874 miles	5.874 miles
Total	122.373 miles	99.506 miles	221.879 miles

FRANK TRUMBULL'S SECOND INSPECTION
June 1894

	Minneapolis	St.Paul	Total
Electric	122.373 miles	95.345 miles	217.718 miles
Cable: Selby Ave.		6.263 miles	6.263 miles
Total	122.373 miles	101.608 miles	223.981 miles

JULY 1, 1901

Minneapolis	127 miles
St.Paul	104 miles
Suburban (Stillwater Division)	24 miles
Total	255 miles

1902 U. S. CENSUS (July 1st)
Entire System

First Main Track	136.41 miles
Second Main Track	97.54 miles
Sidings and Carhouse Track	17.07 miles
Total	251.02 miles
As of December 31, 1901, St.Paul total track	103.93 miles

Miles of Single Track At End of Each Year
1901 to 1921

31-Dec	Minnapolis	StPaul	Suburban	Total
1901	126.84	103.93	20.25	251.02
1902	128.16	104.13	20.26	252.55
1903	127.47	104.89	20.25	252.61
1904	132.14	107.78	24.69	264.61
1905	147.59	124.50	45.17	317.26
1906	149.44	136.21	68.76	354.41
1907	155.68	135.49	72.70	363.87
1908	156.02	135.74	76.63	368.39
1909	158.95	141.57	76.86	377.38
1910	163.23	143.34	76.86	383.43
1911*	163.04	140.69	86.41	390.14
1912*	174.27	141.18	86.47	401.92
1913*	179.62	146.13	86.63	412.38
1914	195.46	154.01	87.25	436.72
1915	196.55	157.29	86.62	440.46
1916	199.43	158.19	87.16	444.78
1917	199.69	163.27	88.42	451.38
1918	199.71	163.26	88.53	451.50
1919	199.76	163.18	89.71	452.65
1920	212.65	164.00	90.21	466.86
1921	217.32	163.94	90.31	471.57

* Suburban mileage inside the city limits was now included in city mileage.
Under the previous basis we have:

1911	169.04	144.46	76.64	390.14
1912	180.22	144.95	76.74	401.92
1913	185.58	149.91	76.89	412.38

Track Mileage at End of Each Year

31-Dec	Single Track	Double Track	Special Track	Total Track
1902	38.12	98.29	17.85	252.55
1903	38.57	97.53	18.98	252.61
1904	41.93	102.19	18.30	264.61
1905	53.30	121.08	21.80	317.26
1906	58.82	134.85	25.89	354.41
1907	58.11	142.29	21.18	363.87
1908	60.37	143.42	21.18	368.39
1909	59.01	148.70	20.97	377.38
1910	58.48	149.70	25.55	383.43
1911	57.89	153.90	24.45	390.14
1912	62.83	157.05	25.00	401.92
1913	62.89	161.09	27.31	412.38
1914	65.62	170.05	31.00	436.72
1915	66.76	171.22	31.26	440.46
1916	67.88	172.75	31.40	444.78

31-Dec	First Main Track	Second Main Track	Carhouse & Storage Track	Total Track
1901	136.41	97.54	17.07	251.02
1917	242.98	176.68	31.72	451.38
1918	243.03	176.80	31.67	451.50
1919	243.07	177.40	32.18	452.65
1920	249.79	184.82	32.25	466.86
1921	252.96	186.29	32.32	471.57
1922	254.01	188.38	32.63	475.02
1923	263.12	196.56	32.66	491.34
1924	264.04	197.77	32.64	494.45
1925	266.11	200.18	32.83	499.12

Track Mileage at the End of Each Year

31-Dec		First Main Track	Second Main Track	Special Track	Total Track	
1897	Mpls	62.338	57.394	2.641	122.373	
	StPaul	55.722	41.682	2.102	99.506	Electric 93.632 Cable 5.874
	Total	118.060	99.076	4.743	221.879	
1907	Mpls	78.45	69.75	7.48	155.68	
	StPaul	67.25	56.54	11.70	135.49	
	Suburban	54.70	16.00	2.00	72.70	
	Total	200.40	142.29	21.18	363.87	
1908	Mpls	78.45	70.45	7.12	156.02	
	StPaul	67.20	56.54	12.00	135.74	
	Suburban	58.14	16.43	2.06	76.63	
	Total	203.79	143.42	21.18	368.39	
1909	Mpls	80.69	71.16	7.10	158.95	
	StPaul	69.09	60.73	11.75	141.57	
	Suburban	57.93	16.81	2.12	76.86	
	Total	207.71	148.70	20.97	377.38	
1910	Mpls	80.82	71.83	10.58	163.23	
	StPaul	69.43	61.06	12.85	143.34	
	Suburban	57.93	16.81	2.12	76.86	
	Total	208.18	149.70	25.55	383.43	
1911	Mpls	-			163.04	
	StPaul				140.69	
	Suburban				86.41	
	Total	211.79	153.90	24.45	390.14	
1912	Mpls	88.38	76.42	9.47	174.27	
	StPaul	66.70	61.13	13.35	141.18	
	Suburban	64.79	19.49	2.18	86.46	
	Total	219.87	157.04	25.00	401.92	
1913	Mpls				179.62	
	StPaul				146.13	
	Suburban				86.63	
	Total				412.38	
1914	Mpls				195.46	
	StPaul				154.01	
	Suburban				87.25	
	Total				436.72	

31-Dec		First	Second	Special	Total
1915	Mpls	98.48	84.98	13.09	196.55
	StPaul	74.67	66.54	16.08	157.29
	Suburban	64.83	19.70	2.09	86.62
	Total	237.98	171.22	31.26	440.46
		Motor Speedway track not included.			
1916	Mpls	100.040	85.980	13.410	199.430
	StPaul	75.620	66.580	15.990	158.190
	Suburban	64.970	20.190	2.000	87.160
	Total	240.630	172.750	31.400	444.780
1917	Mpls	100.101	86.057	13.532	199.690
	StPaul	77.976	69.114	16.184	163.274
	Suburban	64.906	21.512	2.003	88.421
	Total	242.983	176.683	31.719	451.385
1918	Mpls	100.169	86.057	13.482	199.708
	StPaul	77.965	69.114	16.184	163.263
	Suburban	64.983	21.634	2.003	88.530
	Total	243.027	176.805	31.669	451.501
1919	Mpls	100.170	86.102	13.482	199.754
	StPaul	77.968	69.114	16.098	163.180
	Suburban	64.936	22.179	2.599	89.714
	Total	243.074	177.395	32.179	452.648
1920	Mpls	106.621	92.549	13.482	212.652
	StPaul	78.259	69.568	16.173	164.000
	Suburban	64.914	22.699	2.599	90.212
	Total	249.794	184.816	32.254	466.864
1921	Mpls	109.812	94.023	13.482	217.317
	StPaul	78.253	69.564	16.128	163.945
	Suburban	64.898	22.699	2.712	90.309
	Total	252.963	186.286	32.322	471.571
1922	Mpls	110.538	95.666	12.561	218.765
	StPaul	79.037	70.088	15.768	164.893
	Suburban	64.433	22.622	4.306	91.361
	Total	254.008	188.376	32.635	475.019
1923	Mpls	117.652	101.331	12.655	231.638
	StPaul	80.969	71.683	15.768	168.423
	Suburban	64.505	22.544	4.234	91.283
	Total	263.126	195.558	32.657	491.341

31-Dec		First	Second	Special	Total	
1924	Mpls	118.326	102.970	12.655	233.951	
	StPaul	81.236	72.179	15.768	169.183	
	Suburban	64.480	22.621	4.214	91.315	
	Total	264.042	197.770	32.637	494.449	
1925	Mpls	120.009	104.337	12.655	237.001	
	StPaul	81.620	73.217	15.965	170.802	
	Suburban	64.480	22.621	4.214	91.315	
	Total	266.109	200.175	32.834	499.118	
1926	Mpls	122.232	107.058	12.655	241.945	
	StPaul	81.854	73.445	15.935	171.234	
	Suburban	64.478	22.660	4.214	91.352	
	Total	268.564	203.163	32.804	504.531	
1927	Mpls	123.977	110.848	12.655	247.480	
	StPaul	83.252	74.666	15.935	173.853	
	Suburban	63.555	22.660	4.259	90.474	
	Total	270.784	208.174	32.849	511.807	
1928	Mpls	125.943	112.511	12.655	251.109	
	StPaul	83.252	74.666	15.943	173.861	
	Suburban	64.930	22.621	3.731	91.282	
	Total	274.125	209.758	32.329	516.252	
1929	Mpls	127.285	114.640	12.655	254.580	
	StPaul	83.007	74.666	16.000	173.673	
	Suburban	64.896	23.110	3.731	91.737	
	Total	275.188	212.416	32.386	519.990	
1930	Mpls	128.241	116.031	12.655	256.927	
	StPaul	83.885	74.479	15.501	176.865	
	Suburban	64.924	23.046	3.731	91.701	
	Total	277.050	213.556	31.887	522.453	
1931	Mpls	128.813	116.556	12.655	258.024	
	StPaul	83.984	74.477	15.501	173.962	
	Suburban	64.948	23.007	3.746	91.701	
	Total	277.745	214.040	31.902	523.687	Peak Mileage
1932	Mpls	128.817	116.631	12.655	258.103	
	StPaul	84.044	74.705	15.501	174.250	
	Suburban	28.662	13.796	1.831	44.289	
	Total	241.523	205.132	29.987	476.642	

31-Dec		First	Second	Special	Total
1933	Mpls	128.018	116.836	12.655	257.509
	StPaul	84.055	74.687	15.501	174.243
	Suburban	27.783	13.796	1.719	43.298
	Total	239.856	205.319	29.875	475.050
1934	Mpls	127.594	116.836	12.655	257.085
	StPaul	84.092	74.657	14.344	173.093
	Suburban	27.783	13.756	1.770	43.349
	Total	239.469	205.289	28.769	473.527
1935	Mpls	127.643	116.853	12.655	257.151
	StPaul	83.547	74.691	14.344	127.582
	Suburban	27.783	13.796	1.662	43.241
	Total	238.973	205.340	28.661	472.974
1936	Mpls	127.537	116.853	12.655	257.045
	StPaul	83.785	74.691	14.106	172.582
	Suburban	27.783	13.796	1.662	43.241
	Total	239.105	205.340	28.423	472.868
1937	Mpls	127.466	116.853	12.655	256.974
	StPaul	83.781	74.691	14.106	172.578
	Suburban	27.612	13.796	1.662	43.070
	Total	238.859	205.340	28.423	472.622
1938	Mpls	124.250	114.565	12.655	251.470
	StPaul	80.008	72.436	14.106	166.550
	Suburban	25.556	13.796	1.474	40.826
	Total	229.814	200.797	28.235	458.846
1939	Mpls	122.172	113.753	12.655	248.580
	StPaul	78.577	71.395	14.106	164.078
	Suburban	25.395	13.796	1.474	40.665
	Total	226.144	198.944	28.235	453.323
1940	Mpls	118.650	110.583	12.655	241.888
	StPaul	78.577	71.395	14.106	164.078
	Suburban	25.293	13.569	1.474	40.336
	Total	222.520	195.547	28.235	446.302
1941	Mpls	118.456	110.551	12.637	241.644
	StPaul	77.850	71.328	14.106	163.284
	Suburban	25.293	13.569	1.474	40.336
	Total	221.599	195.448	28.217	445.264

31-Dec		First	Second	Special	Total
1942	Mpls	118.412	110.320	11.946	240.678
	StPaul	77.868	71.289	13.798	162.955
	Suburban	25.293	14.095	1.211	40.599
	Total	221.573	195.704	26.955	444.232
1943					444.26
1944					444.38
1945					444.04
1946					443.87
1947					440.84
1948					424.53
1949					424.31
1950					409.99
1951					392.11
1952					270.49

ELECTRIFIED TRACK: TRACK CONSTRUCTION DETAILS

1889 MINNEAPOLIS

Work began October 1, 1889, on the 4th Ave. S. horsecar line removing the light horsecar track. The replacement was reported as 70 lb. T rail spiked to wood crossties spaced at 24" intervals.

1890 St.PAUL

Track on University Ave. used 45 lb. T rail. From Victoria St. west to the city limits the track was located on a 25 ft. wide sodded boulevard. All street crossings were planked.

FRANK TRUMBULL'S INSPECTION REPORT
Rail Data (Electric Lines)
January 18, 1893

Weight in Lbs./Yard	Type	Lineal Feet Minneapolis	Lineal Feet St.Paul
78	Girder	93,538	9,208
60	T	63,153	90,725
53	Girder	none	89,842
52	Johnston	2,000	204,636
51	Johnston	77,600	none
50	T	20,000	46,539
45	T	33,000	none
45	Johnston	266,700	none
40	T	49,200	none
36	Flat	none	8,424
Cast		none	933
Totals		605,491	450,307
		=======	=======
		114.676 miles	85.285 miles

The maximum grade in Minneapolis was 5.6%; in St.Paul 6.0% except Selby Hill which was 16%.

1890-1895 STANDARD

6" heavy girder rail with granite paving blocks laid on a sand foundation. Previous paving types had been macadam, untreated cedar blocks laid on pine boards, and granite paving blocks laid on a sand base.

1896-1902 MINNEAPOLIS

For a number of years, owing to the wretched condition of the business streets, the city council had been making an investigation of the problem with the idea of deciding upon a more satisfactory type of paving. In the spring of 1896 the council decided to experiment with asphalt and made a contract for the paving of the business district streets with that material. MSR made a vigorous protest against the use of asphalt in or adjacent to car tracks, as the life of this paving depended on a rigid foundation and it was not thought possible to wholly prevent vibration from the operation of streetcars. The asphalt paving having been ordered, MSR put in the highest grade of construction its engineers could devise. Wood crossties were spaced 10 ft. apart laid in a solid bed of portland cement concrete. 8" 79 lb. T rails, 60 ft. long, with cast-welded joints (16" long weighing 190 lbs.) were fastened to longitudinal concrete beams tied together with the same bed of concrete that held the ties. The asphalt paving was laid on the concrete foundation.

Traffic was kept off the streets for 14 days to allow the concrete to harden. This resulted in a serious interruption to service and consequent loss of business. Track and paving were completed at a cost of $33,908 per mile of double track. This paving laid during 1896 showed signs of disintegration adjacent to the tracks in a very short time after completion. Repairs were begun during 1898 and continued without interruption until 1906. During this period the entire 43.6 miles of track built with this type of construction was taken up and replaced.

1898 St.PAUL

The all new track construction on the "Selby Avenue" line utilized 80 lb. T rail set in concrete.

TCRT FINANCIAL BROCHURE
July 1, 1901

Extracts from a special report dated 9-21-1899. "In the streets that are paved the company has laid an 80 lb. rail 7" deep. This rail, instead of being placed on ties in the usual manner, is laid directly on a bed of concrete and held in place by iron rods. The joints are not fished, but cast-welded, and then the rails are packed solid with concrete. and the pavement is laid right up against them. There are 20 miles of such track laid down. The rest of the track consists of rails weighing 40, 50, 56 and 60 lbs. to the yard, all T section. Of the 40 lb. rails there are a very small amount in service, the bulk of the track consisting of 56 and 60 lb. rails. Of the total mileage 70 miles have welded joints, the rest having joints of the usual type. Some of the boulevard lines have grass sown between the rails and between the tracks, in keeping with the street. The 'specials' at street crossings, and at junctions and switches are of the best possible type, and are so arranged that the parts most subject to wear can be easily slipped out and replaced."

STREET RAILWAY JOURNAL
March 1, 1902
1902 U.S. CENSUS

Total track 251 miles. 76 miles have cast-welded joints. 25 miles in paved streets consisted of: 7" 80 lb. T rail laid without ties on concrete beams 15" wide x 8½" deep under each rail with tie rods spaced 10 ft. apart. Track on unpaved streets was mostly 7" 80 lb. ASCE T rail with some quantity of 56 lb. and 60 lb. rail.

1908 STREET RAILWAY JOURNAL
1909 COMPANY BOOKLET

As it had been clearly demonstrated that the method of track construction used in rebuilding the Minneapolis business streets during 1896 was a failure, the following method employed in rebuilding all of this trackage was adopted as the company standard. After the old tracks were removed and the roadbed prepared, 6" of crushed rock was placed and thoroughly compacted with steam rollers. (SRJ: 4" to 6" broken stone or gravel.) white oak crossties, 6" x 8" x 8'0",were laid on 24" centers. (SRJ: creosoted, sawed, white pine or sawed or hewn white oak.) 91 lb. T rails were screw-spiked to the crossties. The space between the crossties was filled with 6" of concrete (1:2:4½)(hand-mixed) and firmly tamped. Cast-welded (thermite) rail joints were used.

The area between the rails of each track and between double tracks was paved with 6" cut granite blocks laid on a 1" thick sand cushion over the top of the ties and concrete, and thoroughly grouted with liquid portland cement. The company reported that the cost of this construction was $12 per running foot of double track, or over $60,000 per mile, the most expensive type of track construction laid by any street railway in the United States.

On right-of-way and unpaved streets, 5" 80 lb. ASCE T rail was spiked to 6" x 8" x 8'0" sawed white pine crossties laid on 24" centers. Gravel ballast. Continuous joints. Wolhaupter and Weber joints had also been used.

On all track, opposite joints wereused on straight track with staggered joints on curves.

Special work was mostly solid manganese steel except for a small amount of built-up work made in the company shops.

The maximum grade on the system was one of 9.5% 300 feet long, and the sharpest curve was of 45 ft. radius.

To accommodate the heavier double-truck streetcars it had been found necessary to rebuild practically all of the existing lines with heavier rail. By 1909 only 5% of the track mileage remained with the same weight of rail it had in 1896, and that remaining 5% was all scheduled for rebuilding during 1909.

A. L. DRUM & COMPANY VALUATION REPORT
TRACK CONSTRUCTION DETAILS
MPLS ST RY 1-1-1916 St PAUL CITY RY 1-1-1920

Type	Description
1	7” 91# T rai; cast welded joints; cedar, pine, tamarack, white oak, treated ties on 2’ centers; tie rods 10’ centers; gravel ballast; stone surfaced with gravel. [1921 standard: Lorain Steel Co. 93-507 rail; cast weld, thermit, arc-welded joints; tie rods, flat tie plates, ties 6”x8”x8’0” sawed; 6” crushed stone ballast under ties; granite block paving preferred.]
2	5” 80# ASCE Rail, 60’ lengths; 22” continuous joints or cast welded joints; cedar, pine, tamarack, white oak, treated ties on 2’ centers; gravel ballast; stone surfaced with gravel. Open track: 22” continuous joints; treated ties on 2’ centers; gravel ballast [also cedar, pine, and tamarack ties].
3	5” 80# ASCE rail, 60’ lengths; cast welded joints; cedar, pine, tamarack ties on 10’ centers; tie rods 10’ centers, concrete beam construction.
4	(a) Same as 2 except 7” 80# T rail, all cast welded joints. (b) Same as 3 except 7” 80# T rail.
5	7” 70# T rail; cast welded joints; cedar, pine, tamarack, white oak, treated ties on 2’ centers; tie rods 10’ centers; gravel ballast.
6	7” 70# T rail; cast welded joints; cedar, pine, tamarack ties on 10’ centers; concrete beam construction.
7	7” 70# T rail; cast welded joints, steel ties on 3’ centers; tie rods 10’ centers.
8	8” 79# T rail; cast welded joints; cedar, pine, tamarack, white oak, treated ties on 2’ centers; tie rods 10’ centers, gravel ballast; stone surfaced with gravel.
9	8” 74” T rail; cast welded joints; cedar, pine, tamarack, white oak ties on 2’ centers; tie rods 10’ centers; gravel ballast.
10	8” 74# T rail; cast welded joints; cedar. pine, tamarack ties on 10’ centers; concrete beam construction. [1906 ICS Textbook diagram: 8” 79# shanghai T rail, 60’ lengths.]
11	5 ¾” 60# T rail, 30’ lengths; 22” continuous joints; cedar, pine, tamarack ties on 2’ centers; tie rods 10’ centers, gravel ballast.

1-1-1922 MSR and SPCR Valuation Reports added: 7”91” T rail; cast welded joints; oak and treated ties on 2’ centers, screw spikes with or without clips; tie rods 10’ centers; stone ballast surfaced with gravel.

Guarded Curve Track
Inside Girder Guard Rail used was 6”92”, 6”97#, 7”108”, 7”110# and 7”114#

ENTIRE SYSTEM

1931

Rail in use consisted of 6" 100 and 102 lb. T rail, 7" and 7¼" 102 lb. T rail, and 114 lb. girder guard rail for curves. The latter rail was the heaviest weight rail ever used on the system.

1944

W. C. Gilman & Company Report

"Since 1920 all rail joints have been thermit welded. The track consists chiefly of 102 lb., 93 lb. and 80 lb. T rail on wood crossties, with concrete or granite [block] pavement. Most of the special work is of manganese insert steel construction."

1947

Rail used was 6½" 100 and 110 lb. T rail, and 7" 108 lb. guard rail.

Street Railway Review 2-15-1897

CONCRETE WORK IN TRACK CONSTRUCTION.

When electric traction was adopted on our street railways an era of reconstruction was entered upon as a matter of necessity, and nowhere was reconstruction more imperative than in track work. The new motive power permitted higher speeds and economic operation compelled heavier cars; better service stimulated traffic and longer trains run on shorter headway resulted. The tracks which were built in the days of animal traction did not stand under the severe service, and a more permanent way became a necessity. Thus, track building became a matter for serious consideration, and continues to be so as the work of rebuilding lines and rectifying mistakes proceeds.

The first requisite for economic operation is that the rail shall present a good rolling surface to the wheel. This means the rail must be sufficiently heavy to prevent local deformation under load, and so well supported that it will not deflect by reason of the foundation settling. The heavy and deep rails now used are sufficiently strong as girders when supported at short intervals only, and no difficulty is experienced with tie construction where the roadbed has been properly tamped.

With pavements to be kept up, however, especially if the street traffic is heavy, a problem of no less importance is that of properly supporting the pavement. The advantage of solidity in track and pavement was perhaps as well appreciated in this country as abroad, but it was adopted first in England. The reasons for this are not far to seek. The roads and pavements in England were better built than here, and the street railway is an American institution. We have had to try all kinds of experimental construction in order to determine what was best suited to our needs, and often when we knew that it was poor, yet it was good enough for an ill-paved street. On the other hand, the Briton had good roads and well-paved streets, and with his proverbial conservatism and distrust of all that is new, he was very adverse to having his pavements torn up. Franchises were difficult to secure, and when the tracks were laid repairs were expensive to make; as a consequence only the best construction could be afforded. That this is really the cheapest is well shown in Liverpool, where tracks and pavement have endured what is, perhaps, the heaviest traffic (both cross and longitudinal) in the world with a minimum expense for maintenance.

FIG. 2—SECTION OF TRENCH WORK—TWIN CITY RAPID TRANSIT COMPANY.

A substratum of concrete is ideal for supporting the pavement, and hence, as the track must have as good or better foundation than the adjoining pavement, a large proportion of the newer track is put in on concrete foundation.

In the REVIEW for January F. A. Little presented the figures on cost of concrete foundations, based on the construction of nearly fifty miles of track in Detroit. In that article Mr. Little pointed out the advantage in cost which trench work has over the construction with ties, the difference in labor, paving, etc., when track is laid in a street already paved with asphalt being $1.05 as against $2.85, a saving of 63.5 per cent.

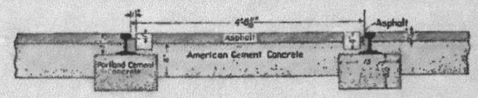


FIG. 1—TRENCH WORK—TWIN CITY RAPID TRANSIT COMPANY.

By the courtesy of W. J. Hield, general manager of the Twin City Rapid Transit Company of Minneapolis, we are enabled to give some data on the cost of trench work in that city. Fig. 1 shows a section with dimensions and Fig. 2 a view from a photograph of a section of the track. The rails used are of the American Society of Civil Engineers' standard, weighing 80 lbs. to the yard and in 60 foot lengths, with the joints cast-welded. In Fig. 2 the section is taken through one of the joints. The flange way is formed by granite blocks 4 to 4½ inches deep laid against a wooden form 1 inch thick. After the cement has set, the form is removed and the spaces between the rails and the granite blocks filled to within an inch of the top with asphalt.

The city ordinances of Minneapolis provide that the raliway company shall pave between the rails and between the lines of double track. The paving was done by contract and in settling with the contractor it was agreed that the company should pay the price of asphalt pavement from outside rail to outside rail, the granite stretchers being furnished by the contractor and figured at the same price and no allowance made for the space occupied by the rails. The pavement is laid on domestic concrete which was included in contract price of $2.45 per square yard.

The following extract from the paving ordinance will explain the method of mixing and laying:

"Upon the sub-grade will be evenly spread a layer of hydraulic cement concrete six inches in thickness to be made as follows:

"One measure of hydraulic cement and two of clean sharp sand, will be thoroughly mixed dry and then made into mortar with the least possible amount of water. Crushed rock of a quality to be accepted by the city engineer and of such dimensions that the various stones will not exceed two and one-half inches in any direction, clean from dust and dirt, drenched with water, but containing no loose water in the heap, will be incorporated immediately with the mortar in such quantity as will give a surplus of mortar when rammed. This proportion, when ascertained, will be regulated by measure.

"Each batch of concrete will be thoroughly mixed. The mixing will be continued until each piece of stone is completely coated with mortar, it will then be spread and at once thoroughly compacted until free mortar appears upon the surface. The whole operation of mixing and laying each batch will be performed as expeditiously as possible and with the use of sufficient number of skilled men. The upper surface will be made exactly parallel with the surface of the pavement to be laid, and when in place, all wheeling, working or walking on it must be prevented until sufficiently set."

The Portland cement for the beams is composed of two and one-half parts sand to one of cement. As much stone is used as this will cover, and the concrete is mixed and laid in the manner described for domestic concrete. Like the paving the trench work was done by contract, so that in the statement below, the concrete and labor of excavating are not to be separated. It is the experience of Mr. Hield that liberal allowance for contingencies must be made in estimating the item of labor, because of the fact that city employes, sub-contractors, plumbers, gas fitters, telegraph and telephone companies, and others, are all working in the street at the same time, and delays which cannot be anticipated, are bound to occur.

The cost of a mile of single track is itemized as follows:

	Per Mile.	Per Foot.
Rails, 125.71 tons at $32.00	$ 4,022.72	$ .762
Cast-welded joints, 176 at $2.84	499.84	.095
Concrete beams	2,640.00	.500
Labor	2,640.00	.500
Tie bars (every 12 feet), spikes, ties and copper cross bonds (every 150 feet)	225.00	.043
Paving, asphalt on 6-inch American concrete	10,869.84	2.059
Total	$20,897.40	$ 3.959

Deducting the rails and joints we have for the cost of single track, $3.10 per lineal foot, which shows that where the railway company is required to put in the pavement there is but little difference in first cost between tie work and trench work on concrete foundations.

As before stated, if the street is already paved with asphalt there is a great saving by the use of trench work. And when the track is be to rebuilt the economy of trench work is apparent. There are no ties to be dug up and replaced, and consequently the sub-grade need not be disturbed, it only being necessary to remove the pavement and the domestic concrete about the base of the rails and lay the new rails upon the old Portland concrete beams.

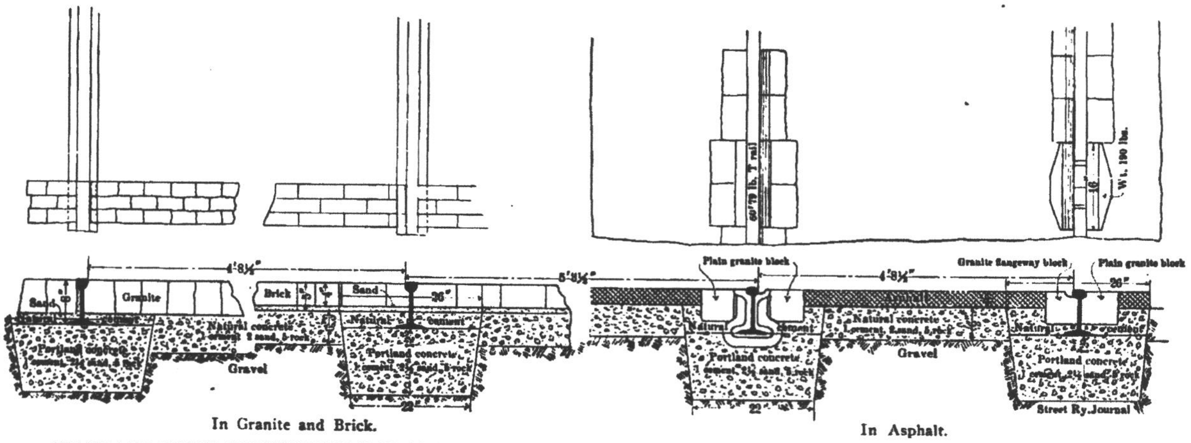
8-29-1903

has been notable for several years, because it was one of the first roads to lay a T-rail in streets paved with asphalt in a city where girder rail had been the rule before. Sections of the standard track construction are shown herewith. The rail used is 8-in. Shanghai T, weighing 79 lbs. to the yard. The concrete beam which supports each rail is 22 ins. to 24 ins. wide and 12 ins. thick under the rail. This is Portland cement concrete. The base of the rail rests directly on this. Around and above the base of the rail is placed 3 ins. of natural cement, if the paving is of brick, and less if the paving is granite. The sections illustrated show the track in asphalt, brick and granite paving. A cast-welded joint 16 ins. long and weighing 190 lbs. is employed. This joint is of somewhat unusual shape, as it extends out from the head of the rail so as to make a substitute for paving at that point. On the inner side the joint has a flange way, which gives the effect of a grooved rail at the joint. The object of this peculiar form of joint is to facilitate paving around the joint and to provide that there shall not be a weak point in the paving at the joint. The rails are purchased in 60-ft. lengths. On old construction tie-rods were used to hold the track to gage, but recently some track has been laid without, with good results, although the non-use of tie-rods is not well enough established to be called standard.

The spaces between and around the paving blocks are filled with Portland cement grout, and fourteen days is allowed for the concrete to thoroughly set before allowing any traffic whatever upon the rails. In less substantially paved streets ties, spaced 2 ft. between centers, are used. These ties are 6 ins. x 8 ins. x 8 ft. A 6-in. concrete base of natural cement is placed between and around the ends of the ties, and on this a sand cushion is spread. The brick or stone paving is set and grouted with Portland cement grout.

For suburban construction a 5-in. 80-lb. A. S. C. E. standard T-rail is adopted. Ties, 6 ins. x 8 ins. x 8 ft., are spaced 2½ ft. between centers. Continuous rail joints are used on this track. Atkinson bonds are standard on this work.

-END-



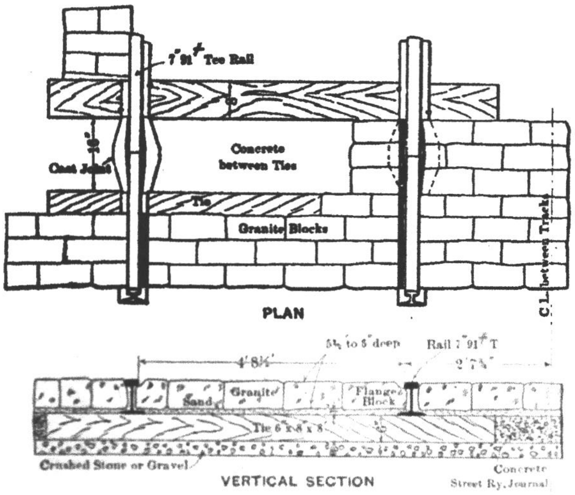
In Granite and Brick. In Asphalt.

STANDARD TRACK CONSTRUCTION IN BRICK AND ASPHALT PAVED STREETS—TWIN CITY RAPID TRANSIT COMPANY

SRJ 7-28-1906

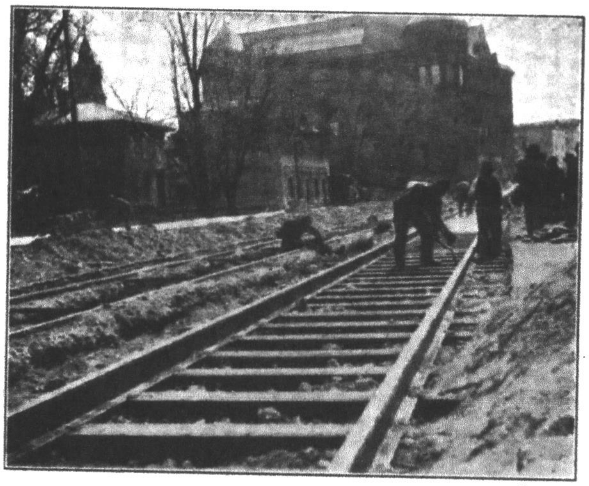
TRACK CONSTRUCTION IN MINNEAPOLIS AND ST. PAUL

During the past two years the Twin City Rapid Transit Company, of Minneapolis and St. Paul, has been making extensive improvements in its track construction in the two cities in which it operates. Quite a lot of the track has been built after the construction shown in the accompanying drawing. The rails are laid on 6-in. x 8-in. x 8-in. ties resting on crushed stone or gravel. About 35,000 ties have been creosoted for the new work. On straight track 7-in, 91-lb. T-rails bonded with cast joints are used. The rails of the special work are 110-lb and are of the grooved type. In the cast welding no attempt is made to keep the ball of the rail cool. George L. Wilson, engineer and roadmaster of the system, under whose direction the new work is being carried out, states that no trouble has been experienced with the softening of the ends of rails cast welded several years ago by the method at present in use. On straight track the rails are tied together every 10 ft. by 1-in. tie rods, and special work which is not cast welded is tied with ¼-in. rods. The spaces between ties and beyond each end of them is filled with concrete. Upon this is laid a 1-in. layer of sand, and this underlies granite blocks 5½ ins. to 6 ins. thick. After the blocks are laid, cement is poured between the cracks.



T-RAIL CONSTRUCTION BY THE TWIN CITY RAPID TRANSIT COMPANY

The half-tone illustration accompanying shows a portion of the new track, on Hennepin Avenue, Minneapolis, near the offices of the company, under construction, and also some of the old track which is being torn out. In building the new track on double-track lines, to interfere with traffic as little as possible, temporary cross-overs are put in about two blocks apart, and one track is used between the cross-overs while the other is being reconstructed.

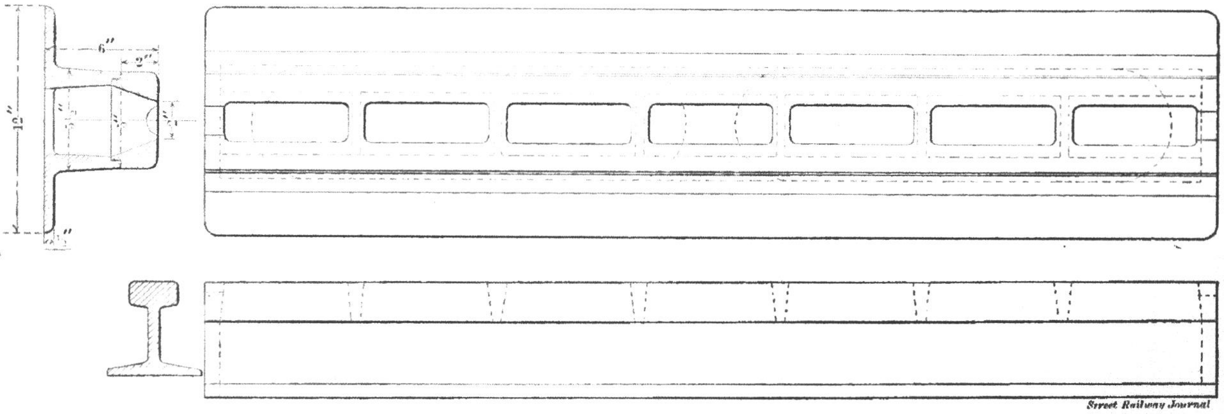


NEW TRACK CONSTRUCTION ON HENNEPIN AVENUE, MINNEAPOLIS

DRAINING STREET RAILWAY TRACKS

SRJ —— 6-27-1903

The question of securing proper drainage for its tracks has been very carefully investigated by the Twin City Rapid Transit Company, with the result that a system has been worked out which has proved very satisfactory in practice. The essential feature of the method employed is illustrated in the accompanying cut, which shows a casting provided with slots opening into a drain connected with the city sewer system. These castings are located in the tracks, between the rails, where surface water would be apt to settle. The plan is very simple and effective, and in the form adopted by the company excellent results are obtained, as the drainage is gradual and leaves no accumulation of dirt or rubbish on the track. As the track is kept constantly dry the life of the roadway is prolonged, and the equipment is similarly benefited, as there is a general improvement in operating conditions.



Track Drip No. 1—Length 4 ft. 2½ ins, for:
52-lb. Girder Rail.
54-lb. " "
78-lb. " "
75-lb. Guard Rail.

Track Drip No. 1—Length 4 ft. 2½ ins, for:
92-lb. Guard Rail.
97-lb. " "
100-lb. " "
Track Drip No. 2—Length 4 ft. 5¼ ins, for:
45-lb. Girder Rail.

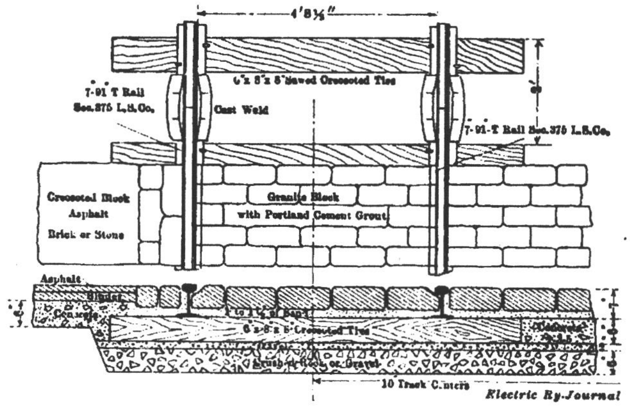
Track Drip No. 2—Length 4 ft. 5¼ ins, for:
51-lb. Guard Rail.
50-lb. T-Rail.
60-lb. "
80-lb. "
70-lb. "

DRAINING TRACKS IN SEWER SYSTEM

TWIN CITY MAINTENANCE-OF-WAY NOTES

ERJ 1-10-1914

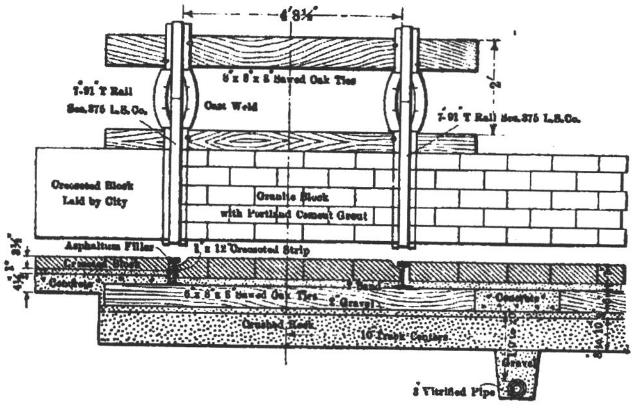
The city of Minneapolis did a great deal of paving during the past summer, mostly with creosoted wood blocks. As a consequence the Twin City Rapid Transit Company has taken the opportunity to relay more track and special work than it would otherwise do. A total of 52 per cent of the total street length in the city is now paved. The railway company has 170 miles of single track within the city limits. Among the items of new equipment bought for this work were a Brown hoist crane car and a second truck-mounted concrete mixer. The mixer is motor-driven, but the car is not.


4'8½"
6"x 8"x 8' Sawed Creosoted Ties
7-91" T Rail
Sec.375 L.S.Co.
Cast Weld
7-91-T Rail Sec.375 L.S.Co.
Creosoted Block
Asphalt
Brick or Stone
Granite Block
with Portland Cement Grout
Asphalt
Binder
Concrete
6"x 8"x 8' Creosoted Ties
Crushed Rock or Gravel
10 Track Centers

Electric Ry. Journal

Cross-Section Track Construction Without Special Drainage

Two forms of track construction were installed last year, one for streets with good natural drainage, the other for track laid on the heavy blue clay soil which is found in some parts of the city. As this clay contains a great deal of water, the track must be artificially drained. Drainage is accomplished by means of a drain tree which slopes from the manhole summits to connections to the city sewers midway between manholes. Cross-sections and plans of these two standard constructions are shown in the accompanying illustrations. The cast-welded joints illustrated are used in the paved streets and Continuous joints elsewhere. The molds for making the cast joints are cast in the company's shops.

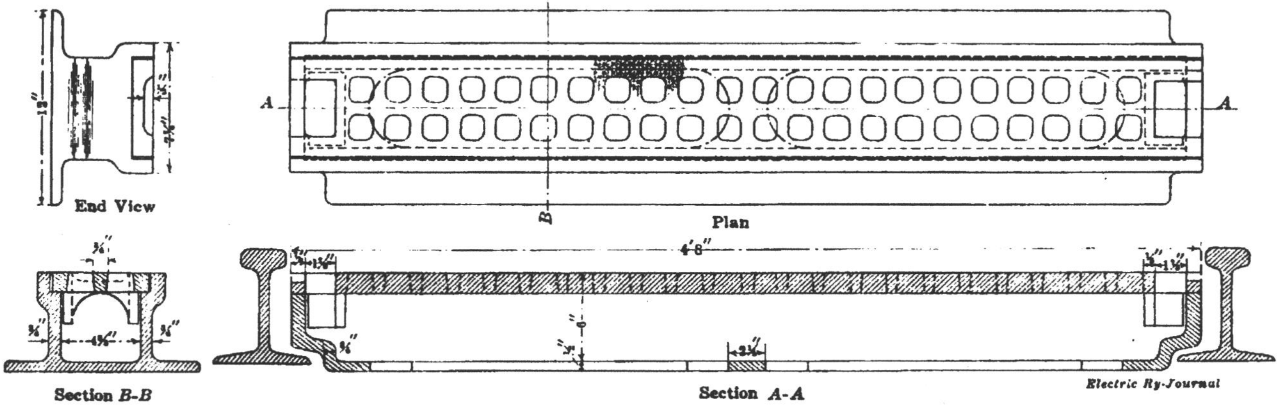

4'8½"
8"x 8"x 8' Sawed Oak Ties
7-91" T Rail
Sec.375 L.S.Co.
Cast Weld
7-91" T Rail Sec.375 L.S.Co.
Creosoted Block
Laid by City
Granite Block
with Portland Cement Grout
Asphaltum Filler
1"x 12" Creosoted Strip
Creosoted Block
6"x 8"x 8' Sawed Oak Ties
2" Sand
2" Gravel
Concrete
Crushed Rock
10' Track Centers
Gravel
8" Vitrified Pipe

Electric Ry. Journal

Cross-Section of Track Construction Equipped with Drainage Tiling

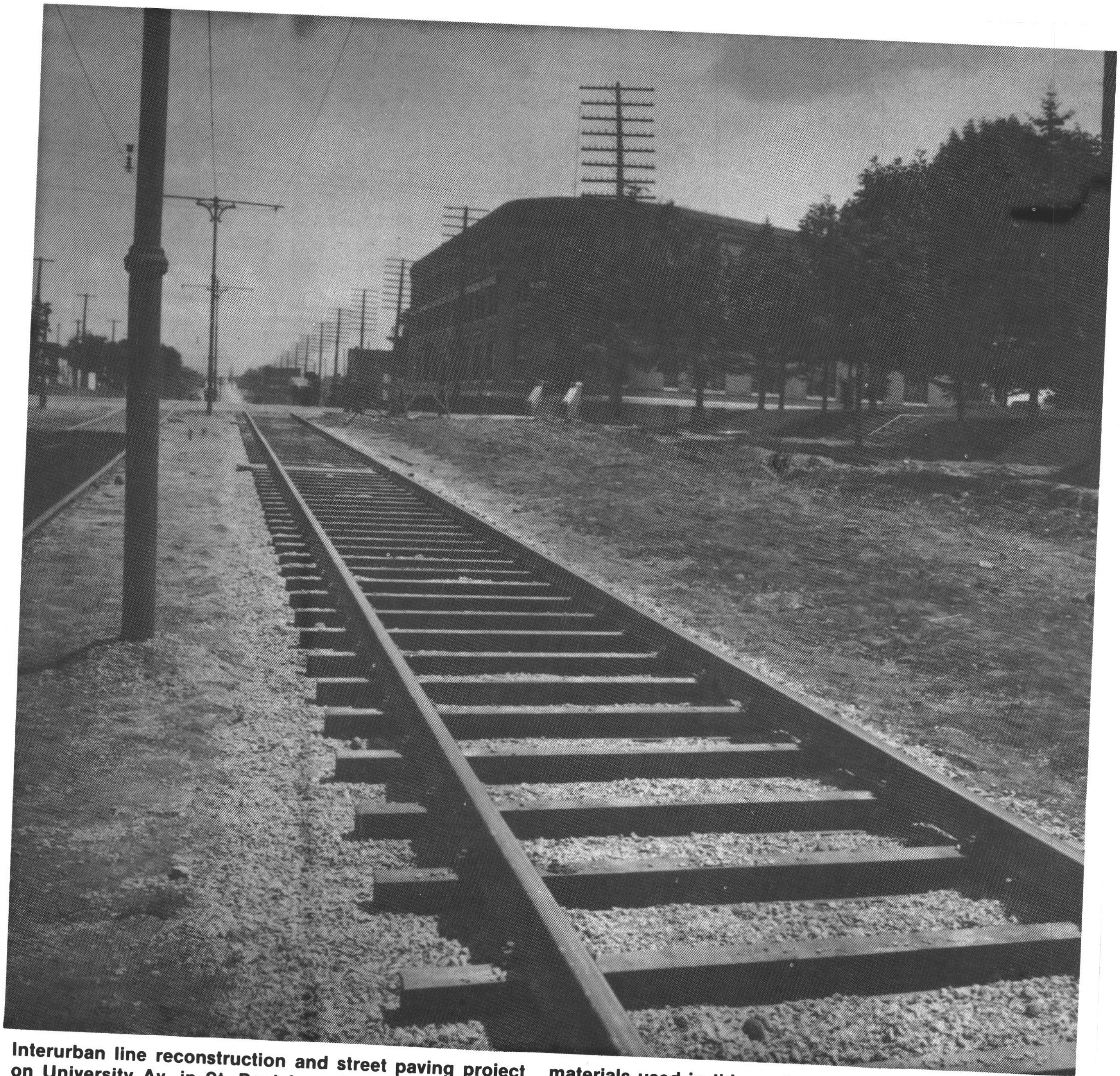
As shown in one of the accompanying drawings, a novel feature of the track construction is the use of cast-iron drip boxes with grating covers which are placed about a block apart. The boxes are mounted on concrete bases and are connected by drain pipe with the city sewers. It is possible to do this as the sewer system in Minneapolis, as well as in St. Paul, is a combined one which takes care of storm water as well as regular sewage.

While the company buys special work from the leading manufacturers, its shop facilities have made possible much home manufacture of built-up crossings, switches, frogs and even of entire track layouts. The 6-in. construction is largely of built-up type, while steel castings are used for the 7-in. pieces. A regular laying-out floor is provided, and on this templates for use in the shop are prepared. Full-size drawings are made for switches and mates. All special work, whether purchased or manufactured, is set up and fitted in a yard provided for the purpose. The same men set the work up in the yard and the street. Thus, mistakes at the location are avoided.


End View
B
B
A
A
Plan
Section B-B
4'8"
Section A-A

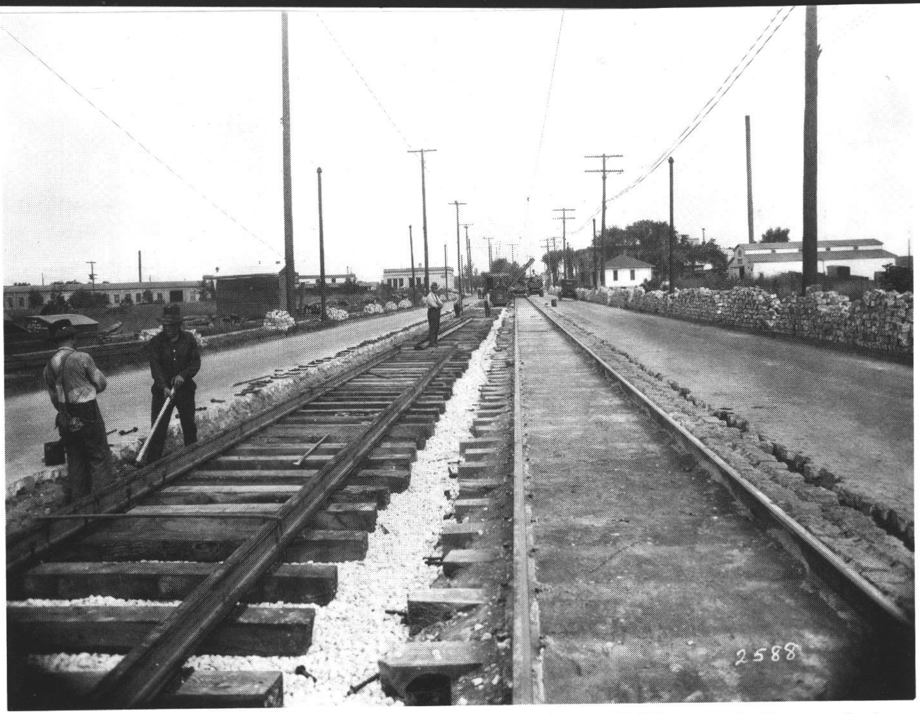
Electric Ry-Journal

Plans of Cast-Iron Track Dips



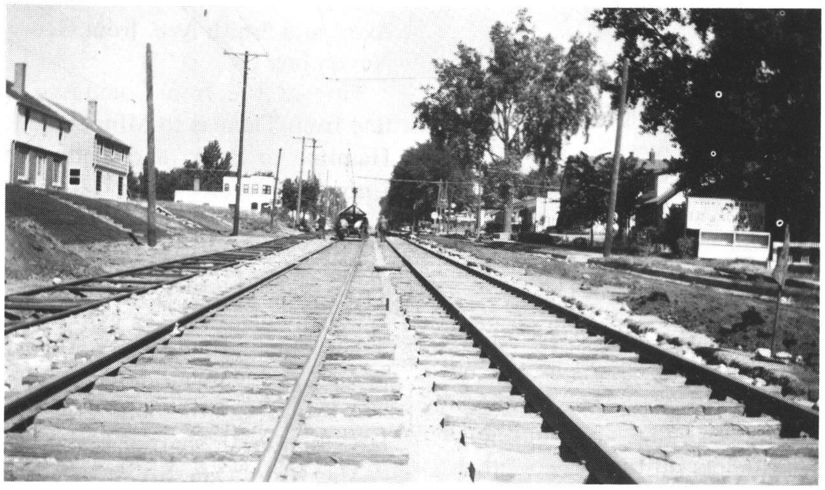
Interurban line reconstruction and street paving project on University Av. in St. Paul from Raymond Av. to the Minneapolis city limits in 1908. The photo shows steel I-beam cross ties used in this section of the project. The 1908 TCRT Construction Journal reported the following materials used in this project: 320 steel ties, 2000 3/4" x 2-1/2" track bolts for steel ties, 2000 steel clips, 1,490 oak ties, 59.22 cubic yards of crushed rock and 2.857 tons of 5" 80 lb. T rail (106 ft. of single track). Photo from the Russell Olson collection.

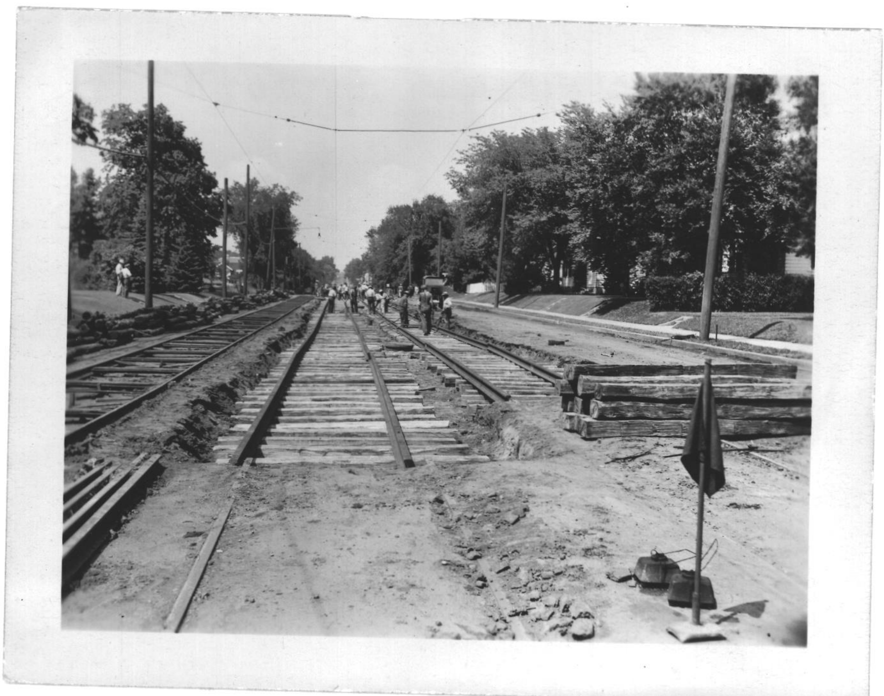
POLY-VU
AVERY™



Track construction on Lyndale Ave. N., Minneapolis, in 1927; stone ballast, oak ties, screw spikes, 7" 93 lb. T rail, and granite paving blocks laid on a concrete foundation. (A. D. Roth; Robert Bowes collection)

Track construction on Nicollet Ave., Minneapolis, in October, 1947, looking north from 59th St. Portable track can be seen on the left with one of the rail grinders (39 or 40) on the southbound track. (Robert Schumacher)





NICOLLET AVE.
54TH ST. TO 58TH ST.

TWIN CITY LINES

TRACK MILES - JANUARY 1, 1940

City of Minneapolis, January 1, 1939		257.162 Miles Single Track	
Additions - 1939			
None			
Deductions - 1939			
Harriet R/W at Harriet Loop	0.079		
Harriet R/W Spur track, France Ave. Loop	0.056		
Harriet R/W Crossover at " " "	0.026		
Marquette Ave. at 6th Street	0.023		
Hennepin Ave. " 12th Street	0.054		
12th Street, Henn. Ave. to Hawthorne Ave.	0.086		
Hawthorne Ave., 12th St.to Bryant Ave.No.	1.244		
Bryant Av.No.,Hawthorn Av.to Laurel Ave.	0.173		
Laurel Ave., Bryant Ave. to Upton Ave.	1.310	3.051	
Total Miles in Minneapolis January 1, 1940			254.111
City of Saint Paul, January 1, 1939		172.493	
Additions - 1939			
10th St.W.,Wabasha to St.Peter St.	0.191	0.191	
Total		172.684	
Deductions - 1939			
Concord St. at State Street	0.072		
Broadway St. at 4th Street	0.011		
Robert Street, 7th to 8th Streets	0.040		
Sibley Street, 3rd to 4th Streets	0.048		
St.Peter St., 7th to 10th Streets	0.456		
Hope Street, 7th to 4th Street	0.423		
Hourth Street, Hope to Atlantic Street	1.613	2.663	
Total Miles in Saint Paul, January 1, 1940			170.021
Suburban Division, January 1, 1939		29.191	
Additions - 1939			
None			
Deductions - 1939			
None			
Total Miles Suburban Division, January 1, 1940			29.191
Total Miles Single Track Twin City Lines, January 1, 1940			453.323

2-23-40
(3)

TWIN CITY LINES

TRACK MILES - JANUARY 1, 1941

City of Minneapolis, January 1, 1940		254.111 Miles Single Track	
Additions			
Hawthorne Ave., 9th St. to 11th St. N. (deducted in 1939)		0.304	
Total		254.415	
Deductions			
Johnson St.N.E.Wye at Stone Quary	0.125		
Grand St.N.E. at 30th Ave. Crossover	0.012		
Nicollet Ave. at 32nd St. Crossover	0.012		
Sixth Ave. N., Hoag Ave. to Russell Ave.	2.923		
Eleventh St., Henn. to 3rd Ave.So.	1.002		
Franklin Ave., Cedar to 27th Ave.S.E.	2.922	6.996	
Total in Minneapolis, January 1, 1941			247.419
City of St. Paul, January 1, 1940		170.021	
Additions			
None			
Deductions			
None			
Total in Saint Paul, January 1, 1941			170.021
Suburban Division, January 1, 1940		29.191	
Additions			
None		-	
Deductions			
Mahtomedi Line, Between Birchwood & Willernie	0.227		
" " Crossover East of Duluth Ave.	0.011		
Concord Street, at Marie Ave. Wye	0.060		
Hopkins Line, Crossover West of Hopkins Sub-Station	0.031	0.329	
Total Suburban Division, January 1, 1941			28.862
Total Miles Single Track Twin City Lines, January 1, 1941			446.302

4-2-1941
(3)

TWIN CITY LINES

TRACK MILES - JANUARY 1, 1942

City of Minneapolis, January 1, 1941			247.419 Miles Single Track
Additions			
None			
Deductions			
Due to error in 1941 report	0.001		
Lake St. at 22nd Ave.-E.Ent. Curve	0.018		
Glenwood Ave. at Aldrich Ave. Wye leg	0.019		
11th St. at Hawthorne Ave.- Wye	0.072		
11th St., 3rd Ave. to 4th Av.So. E.B.T.	0.023		
27th Ave. S.E. - Wye to Bridge	0.111	0.244	
Total in Minneapolis, January 1, 1942			247.175 Miles Single Track
City of St. Paul, January 1, 1941			170.010 " " "
Additions			
None			
Deductions			
Brainerd Ave. at Burr St. - Wye	0.060		
Western Ave., Como Ave. to Cook St.	0.734	0.794	
Total in St. Paul, January 1, 1942			169.216 Miles Single Track
Suburban Division, January 1, 1941			28.873 " " "
Additions			
None			
Deductions			
None			
Total Suburban Division, January 1, 1942			28.873 Miles Single Track
Total Miles Single Track Twin City Lines, Jan.1,1941			445.264 .

1-31-1942
(3)

TWIN CITY LINES

TRACK MILES - JANUARY 1,1943

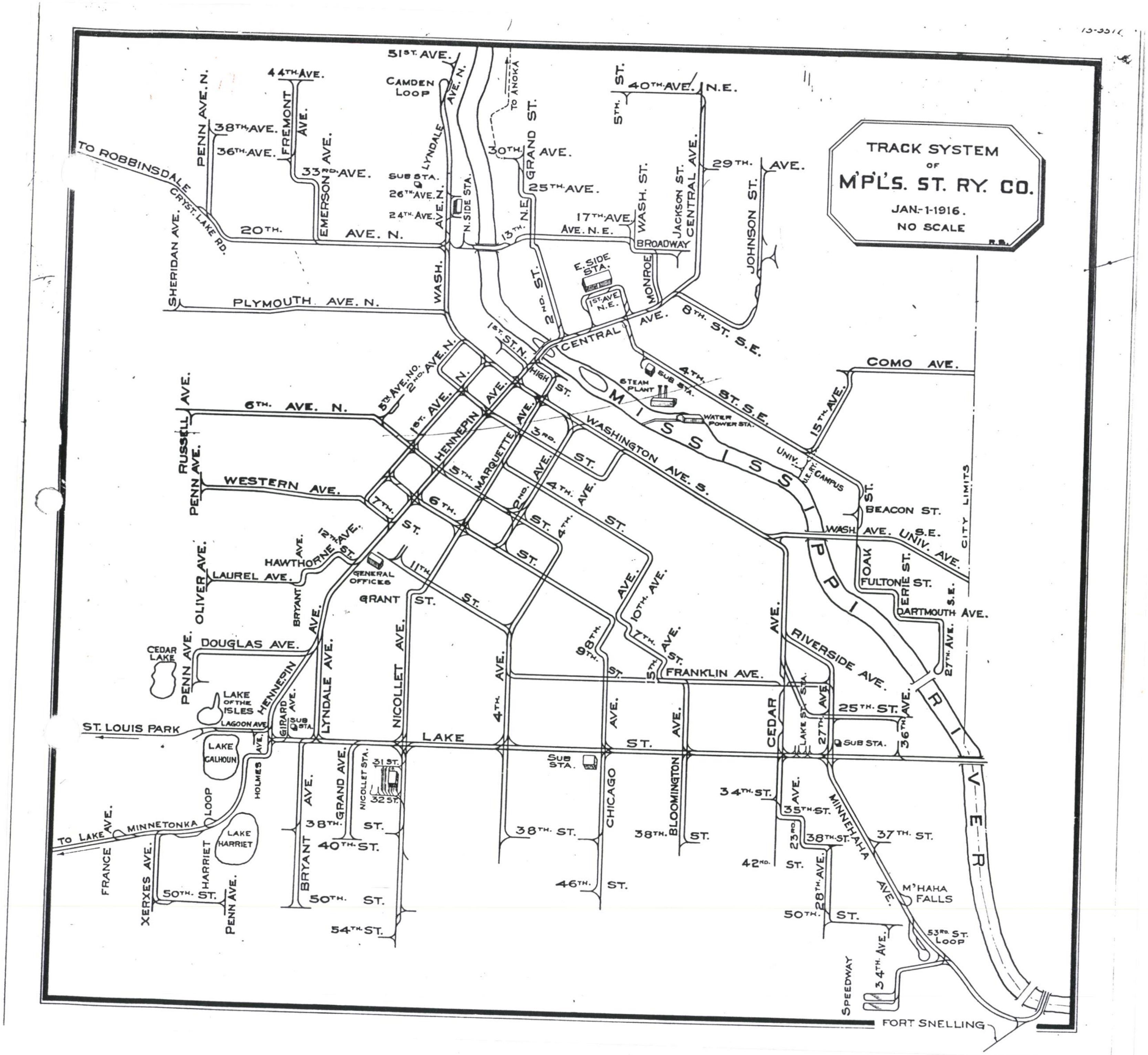
City of Minneapolis, January 1, 1942		247.175	Miles Single Track
Additions			
First Ave. N.E. 2nd St. to tracks #37 to 39, East Side Station	0.078		
France Ave.So. and 51st St., new wye	0.051		
Johnson St.N.E. & 33rd Ave., wye leg	0.005		
Total Additions	0.134		
Deductions			
East Side Station, Curve in Track #40	0.017		
Lake St. Station, W. end Track #7, all of Tracks Nos.10,11,12,29 and 30	0.551		
North Side Station Track #17	0.123		
Fifth St., 5th Ave. No. to 6th Ave. No.	0.075		
Sixth Ave. No., 5th St. to Hoag Ave.	0.334		
Total Deductions	1.100		
Net Deductions		0.966	
Total in Minneapolis, January 1, 1943		246.209	Miles Single Track
City of St. Paul, January 1, 1942		169.216	" " "
Additions			
Como Gravel Pit Dump Track	0.071		
St.Clair Ave. & Snelling Ave., new curve	0.018		
Total Additions	0.089		
Deductions			
Fifth St. W. at Main Ave., side track	0.009		
Main Ave., Kellogg Blvd. to 5th St., side track	0.030		
Snelling Station Yard Tracks Nos. 2-C, 4-C, 5-C, 6-C, & 7-C	0.379		
Total Deductions	0.418		
Net Deductions		0.329	
Total in St. Paul, January 1, 1943		168.887	" " "
Suburban Division, January 1, 1942		28.873	" " "
Additions			
Col. Heights Line O.B. track on 40th Ave.N.E.	0.146		
Robbinsdale Line, O.B. track on France Ave.N.	0.417		
Total Additions	0.563		
Deductions			
Hopkins Gravel Pit Spur	0.116		
Mahtomedi Line, Storage Tracks at Willernie Wye	0.140		
Col. Heights Line, old Turnout at 40th & Central	0.012		
Col. Heights Line in Wye at Van Buren Street	0.017		
Robbinsdale Line, Turnout at Oakdale & Ewing	0.015		
Total Deductions	0.300		
Net Additions		0.263	
Total Suburban Division, January 1, 1943		29.136	" " "
Total Miles Single Track Twin City Lines, Jan. 1, 1943		444.232	

Minneapolis Street Railway

01-01-1916 and

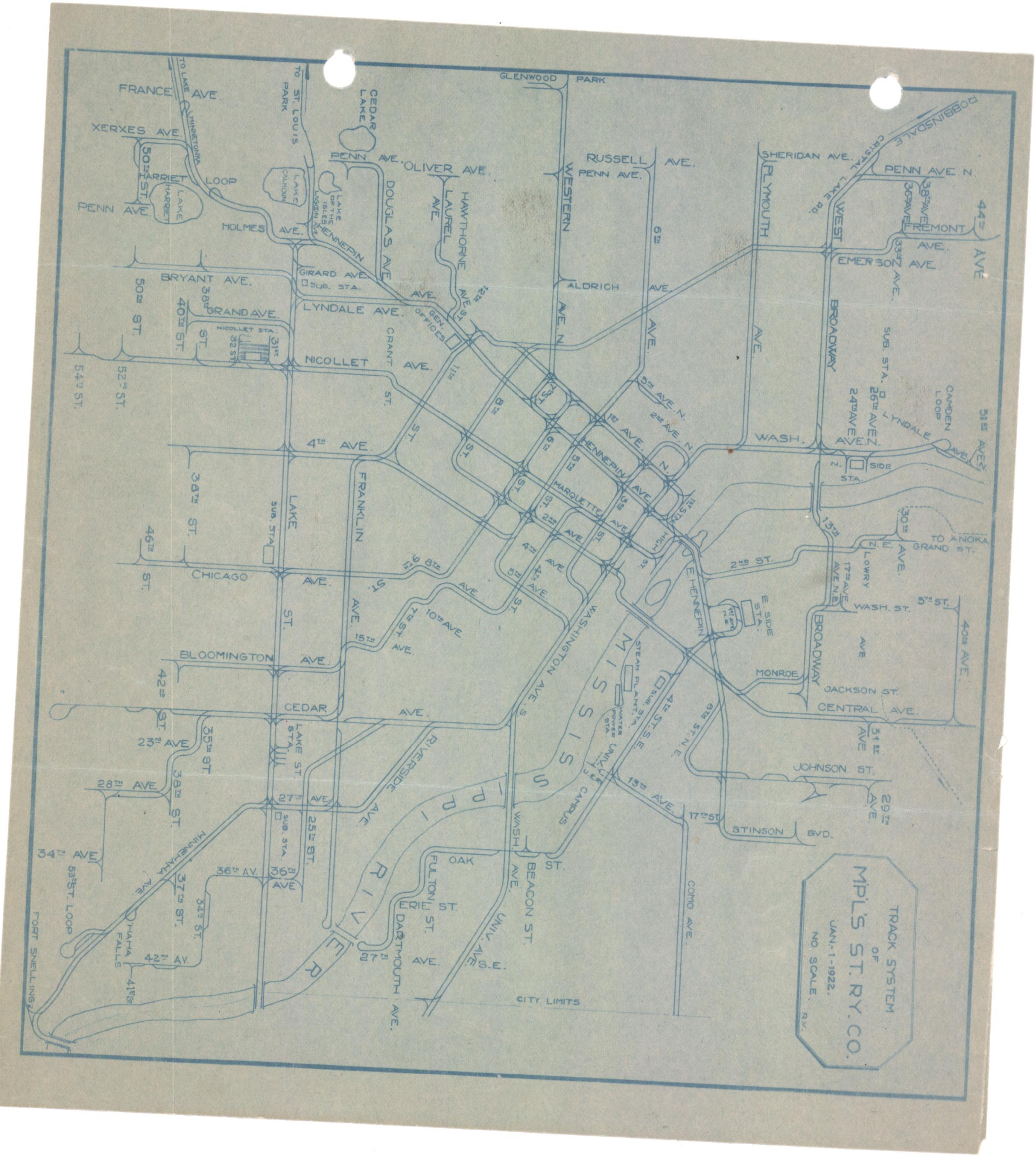
01-01-1922

AVERY®
PV119ED



TRACK SYSTEM
OF
M'PL'S. ST. RY. CO.
JAN.-1-1916.
NO SCALE

R.B.
51ST. AVE.
44TH AVE.
CAMDEN LOOP
TO ANOKA
40TH AVE. N.E.
5TH. ST.
PENN AVE. N.
38TH AVE.
36TH AVE.
FREMONT AVE.
33RD AVE.
EMERSON AVE.
LYNDALE AVE. N.
SUB STA.
26TH AVE. N.
24TH AVE.
N. SIDE STA.
30TH. AVE.
GRAND ST.
25TH AVE.
29TH. AVE.
CENTRAL AVE.
JACKSON ST.
WASH. ST.
JOHNSON ST.
17TH AVE.
AVE. N.E.
13TH. N.E.
BROADWAY
TO ROBBINSDALE
CRYST. LAKE RD.
SHERIDAN AVE.
20TH. AVE. N.
WASH. AVE. N.
E. SIDE STA.
1ST AVE N.E.
MONROE
2ND. ST.
PLYMOUTH AVE. N.
CENTRAL AVE.
8TH. ST. S.E.
1ST. ST. N.
HIGH ST.
SUB STA.
STEAM PLANT
4TH. ST. S.E.
COMO AVE.
WATER POWER STA.
15TH AVE.
5TH AVE. NO.
2ND. AVE. N.
1ST. AVE. N.
HENNEPIN AVE.
MARQUETTE AVE.
2ND. AVE.
3RD. ST.
4TH. ST.
WASHINGTON AVE. S.
MISSISSIPPI RIVER
UNIV. CAMPUS
RUSSELL AVE.
6TH. AVE. N.
PENN AVE.
WESTERN AVE.
5TH. ST.
6TH. ST.
7TH. ST.
4TH. AVE.
ST.
BEACON ST.
WASH. AVE. S.E.
UNIV. AVE.
CITY LIMITS
OAK ST.
ERIE ST.
FULTON ST.
DARTMOUTH AVE.
S.E.
12TH. AVE.
HAWTHORNE
OLIVER AVE.
LAUREL AVE.
BRYANT AVE.
GENERAL OFFICES
11TH. ST.
GRANT ST.
10TH. AVE.
7TH. ST.
15TH. AVE.
9TH. ST.
8TH. ST.
FRANKLIN AVE.
RIVERSIDE AVE.
27TH. AVE.
CEDAR LAKE
DOUGLAS AVE.
PENN AVE.
LYNDALE AVE.
NICOLLET AVE.
4TH. AVE.
CHICAGO AVE.
BLOOMINGTON AVE.
CEDAR AVE.
LAKE ST.
27TH. AVE.
25TH. ST.
36TH. AVE.
LAKE OF THE ISLES
HENNEPIN AVE.
GIRARD AVE.
SUB STA.
ST. LOUIS PARK
LAGOON AVE.
LAKE ST.
SUB STA.
LAKE CALHOUN
HOLMES AVE.
NICOLLET STA.
31 ST.
32 ST.
SUB STA.
34TH. ST.
35TH. ST.
MINNEHAHA AVE.
BRYANT AVE.
GRAND AVE.
38TH. ST.
40TH. ST.
38TH. ST.
38TH. ST.
38TH. ST.
37TH. ST.
23RD. AVE.
42ND. ST.
28TH. AVE.
TO LAKE MINNETONKA
LOOP
LAKE HARRIET
FRANCE AVE.
XERXES AVE.
HARRIET AVE.
50TH. ST.
PENN AVE.
50TH. ST.
54TH. ST.
46TH. ST.
50TH. ST.
M'HAHA FALLS
53RD. ST. LOOP
34TH. AVE.
SPEEDWAY
FORT SNELLING

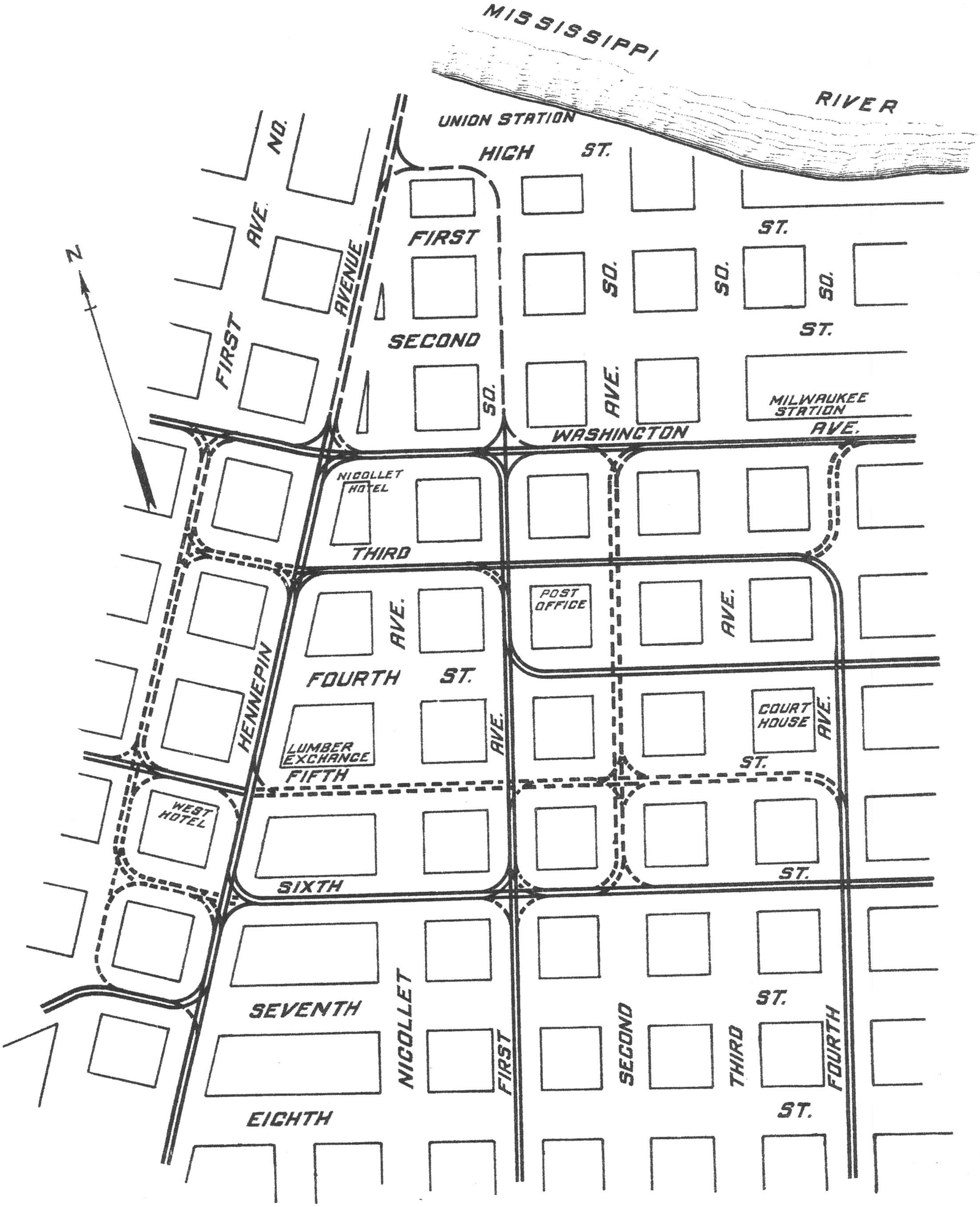

TRACK SYSTEM
OF
MPL'S ST. RY. CO.
JAN. 1 - 1922.
NO SCALE.
R.V.

TO LAKE MINNETONKA
FRANCE AVE.
XERXES AVE.
50TH ST.
HARRIET
LAKE HARRIET
LOOP
PENN AVE.
TO ST. LOUIS PARK
CEDAR LAKE
LAKE CALHOUN
LAKE OF THE ISLES
LOGAN AVE.
HOLMES AVE.
HENNEPIN AVE.
PENN AVE.
DOUGLAS AVE.
OLIVER AVE.
LAUREL AVE.
HAWTHORNE AVE.
12TH ST.
GLENWOOD PARK
WESTERN AVE. N
RUSSELL AVE.
PENN AVE.
6TH AVE.
ALDRICH AVE.
PLYMOUTH AVE.
SHERIDAN AVE.
ROBBINSDALE
CRYSTAL LAKE RD.
WEST BROADWAY
PENN AVE N.
38TH AVE.
36TH AVE.
FREMONT AVE.
44TH AVE.
33RD AVE.
EMERSON AVE.
SUB. STA.
26TH AVE.
24TH AVE.
CAMDEN LOOP
LYNDALE AVE.
51ST AVE. N.
BRYANT AVE.
50TH ST.
38TH GRAND AVE.
40TH ST.
GIRARD AVE.
SUB. STA.
LYNDALE AVE.
GEN. OFFICES
NICOLLET STA.
32 ST.
31ST
NICOLLET AVE.
GRANT ST.
11TH ST.
54TH ST.
52ND ST.
8TH ST.
7TH ST.
6TH ST.
5TH ST.
1ST ST.
5TH AVE. N.
2ND AVE. N.
1ST AVE. N.
HENNEPIN AVE.
WASH. AVE. N.
N. SIDE STA.
4TH AVE.
38TH ST.
46TH ST.
LAKE ST.
SUB. STA.
FRANKLIN AVE.
ST.
MARQUETTE AVE.
2ND AVE.
4TH AVE.
5TH AVE.
4TH ST.
3RD ST.
1ST ST.
CHICAGO AVE.
9TH ST.
8TH AVE.
10TH AVE.
7TH ST.
15TH AVE.
TO ANOKA
30TH AVE.
N.E. GRAND ST.
2ND ST.
E. HENNEPIN
LOWRY AVE.
17TH AVE. N.E.
WASH. ST.
5TH ST.
40TH AVE.
E. SIDE STA.
BROADWAY
AVE.
MONROE
JACKSON ST.
CENTRAL AVE.
31ST AVE.
BLOOMINGTON AVE.
WASHINGTON AVE. S.
MISSISSIPPI RIVER
STEAM PLANT
SUB STA.
WATER POWER STA.
4TH ST. S.E.
8TH ST. N.E.
UNIV. AVE.
CAMPUS
15TH AVE.
17TH ST.
JOHNSON ST.
29TH AVE.
STINSON BVD.
42ND ST.
CEDAR AVE.
23RD AVE.
35TH ST.
38TH ST.
LAKE ST. STA.
28TH AVE.
27TH AVE.
RIVERSIDE AVE.
SUB. STA.
25TH ST.
34TH AVE.
MINNEHAHA AVE.
36TH AV.
36TH AVE.
37TH ST.
34TH ST.
53RD ST. LOOP
HAHA FALLS
42ND AV.
41ST ST.
FORT SNELLING
OAK ST.
WASH AVE.
BEACON ST.
FULTON ST.
ERIE ST.
DARTMOUTH AVE.
27TH AVE.
UNIV. AVE. S.E.
COMO AVE.
CITY LIMITS

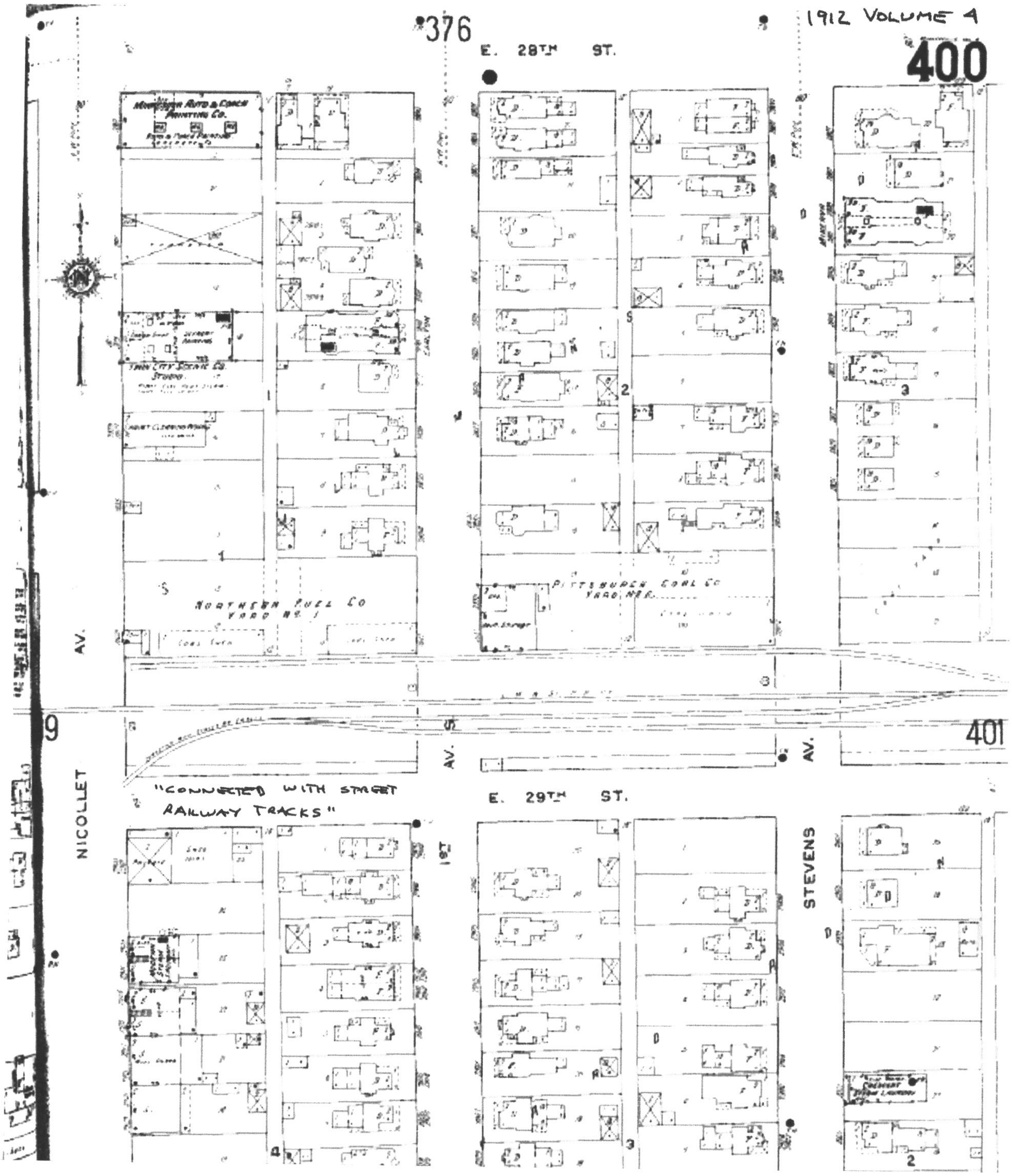
No. 21

“THE LOOPS”

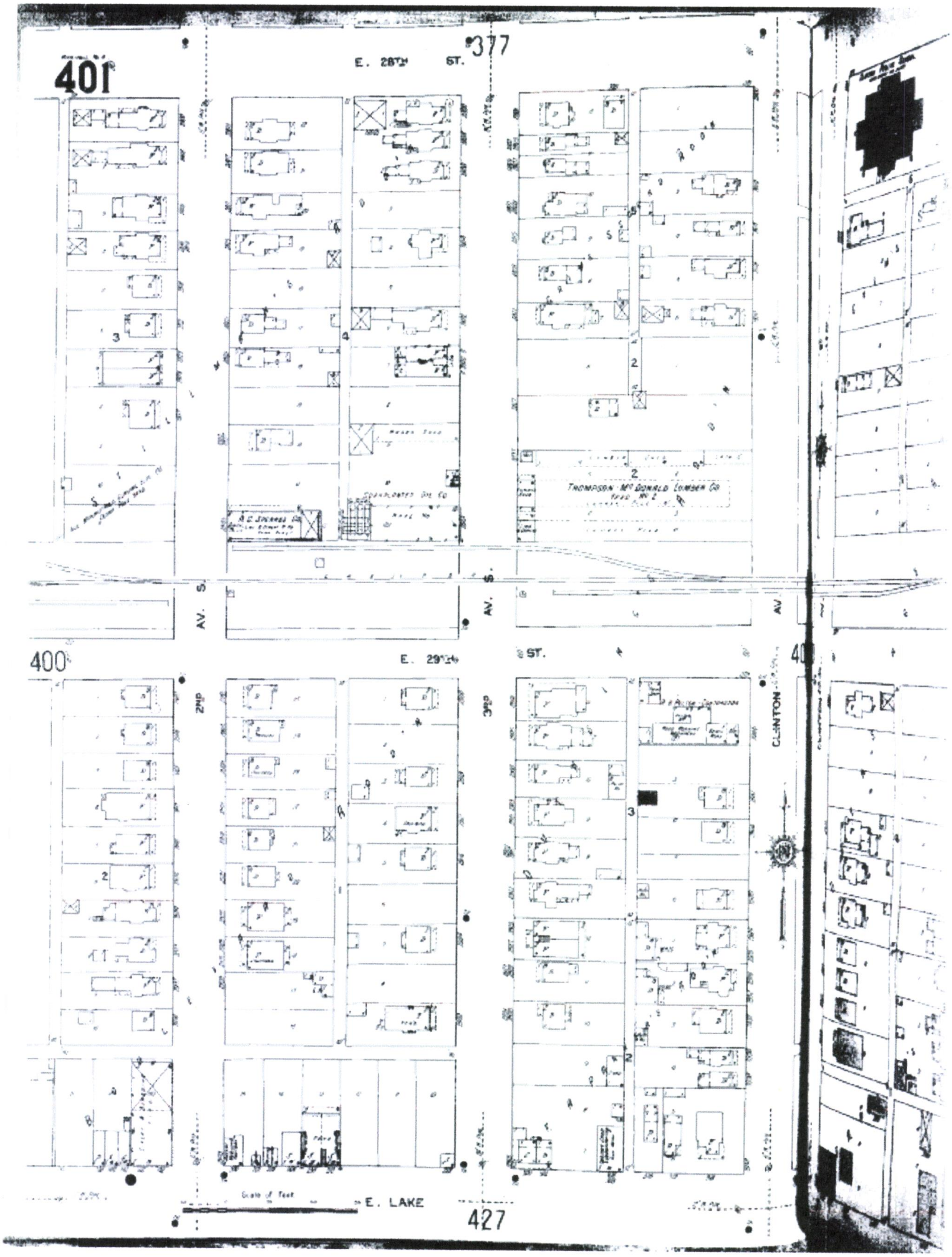
1909 MSA BOOKLET

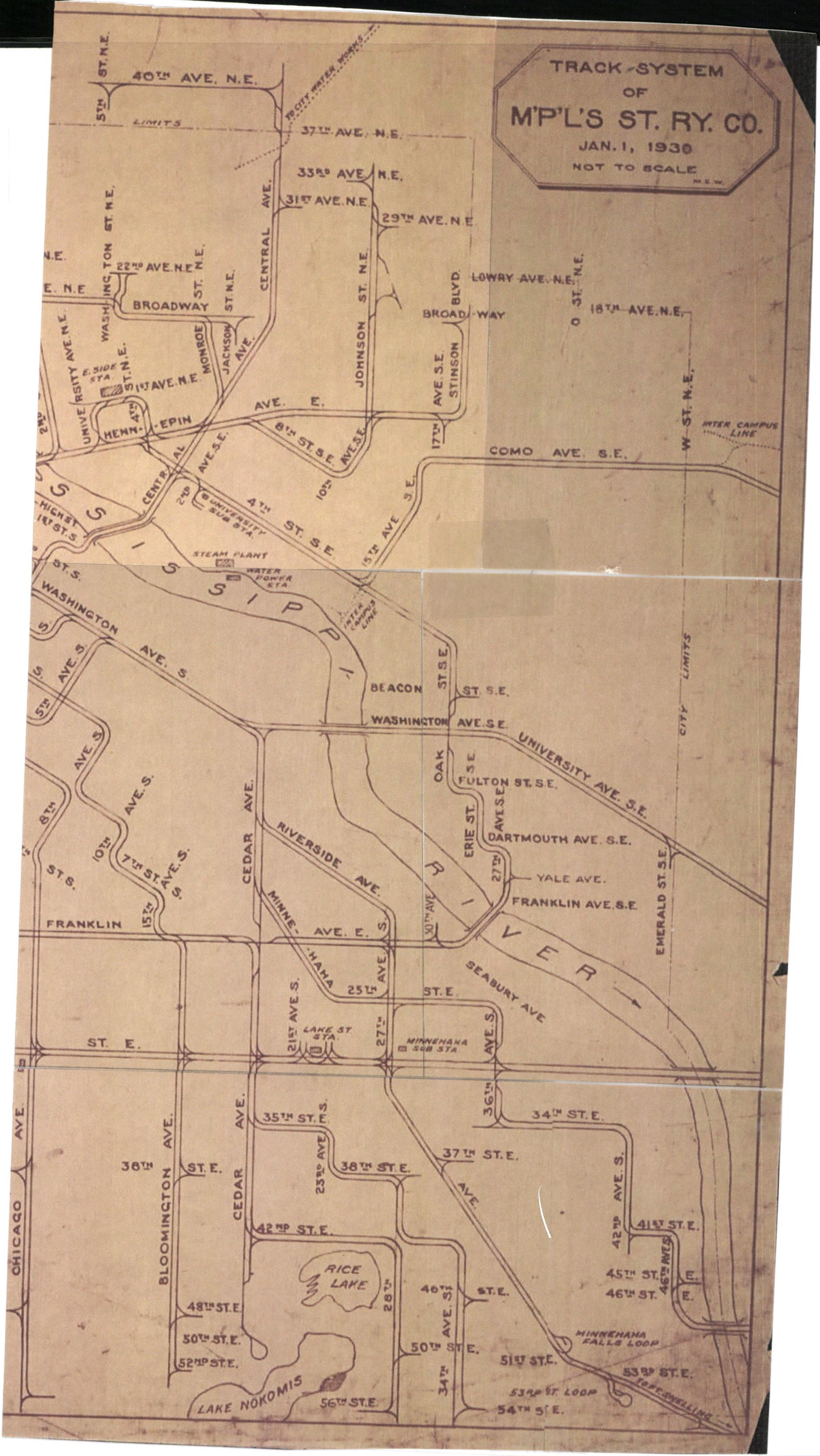

MISSISSIPPI
RIVER
UNION STATION
HIGH ST.
FIRST ST.
SECOND ST.
WASHINGTON AVE.
MILWAUKEE STATION
NO. FIRST AVE.
FIRST AVENUE
SO. SO. SO.
SO. AVE.
N
NICOLLET HOTEL
THIRD
POST OFFICE
AVE. AVE.
FOURTH ST.
COURT HOUSE
AVE. AVE.
LUMBER EXCHANGE
HENNEPIN
FIFTH ST.
WEST HOTEL
SIXTH ST.
SEVENTH ST.
NICOLLET
FIRST
SECOND
THIRD
FOURTH
EIGHTH ST.

AVERY® PV119ED


376
E. 28TH ST.
1912 VOLUME 4
400
Minneapolis Auto & Coach Painting Co.
Twin City Scenic Co. Studio
Northern Fuel Co Yard No. 1
Pittsburgh Coal Co Yard No. 2
NICOLLET AV.
1ST AV. S.
STEVENS AV.
9
401
"CONNECTED WITH STREET RAILWAY TRACKS"
E. 29TH ST.

The Motor Line built a 3ft gage spur track here for freight transfer purposes. Mpls. St. Ry. converted it to std gage about 1889 and made one track dual-gage on Nicollet Ave to 31st St.. This was for hauling building materials and machinery to the cable powerhouse being built. Also received track materials as well as tank cars of crude oil for the powerhouse operation. As of June 9, 1896, MSR had stockpiled over 800 tons of new steel rails here for track construction projects. Probably used for receiving streetcar building materials. The need for this connection substantially diminished after the powerhouse was taken out of service (1897-1898) and the carbuilding shops moved to the newly built Snelling Shops (Sep-Oct 1907). Apparently intact as of 1912 per Sanborn Insurance Map.


401
E. 28TH ST.
377
3
4
2
CONSOLIDATED OIL CO.
THOMPSON-MCDONALD LUMBER CO.
YARD NO. 2
2ND
AV. S.
3RD
AV.
AV
400
E. 29TH
ST.
40
CLINTON
3
2
Scale of Feet
E. LAKE
427

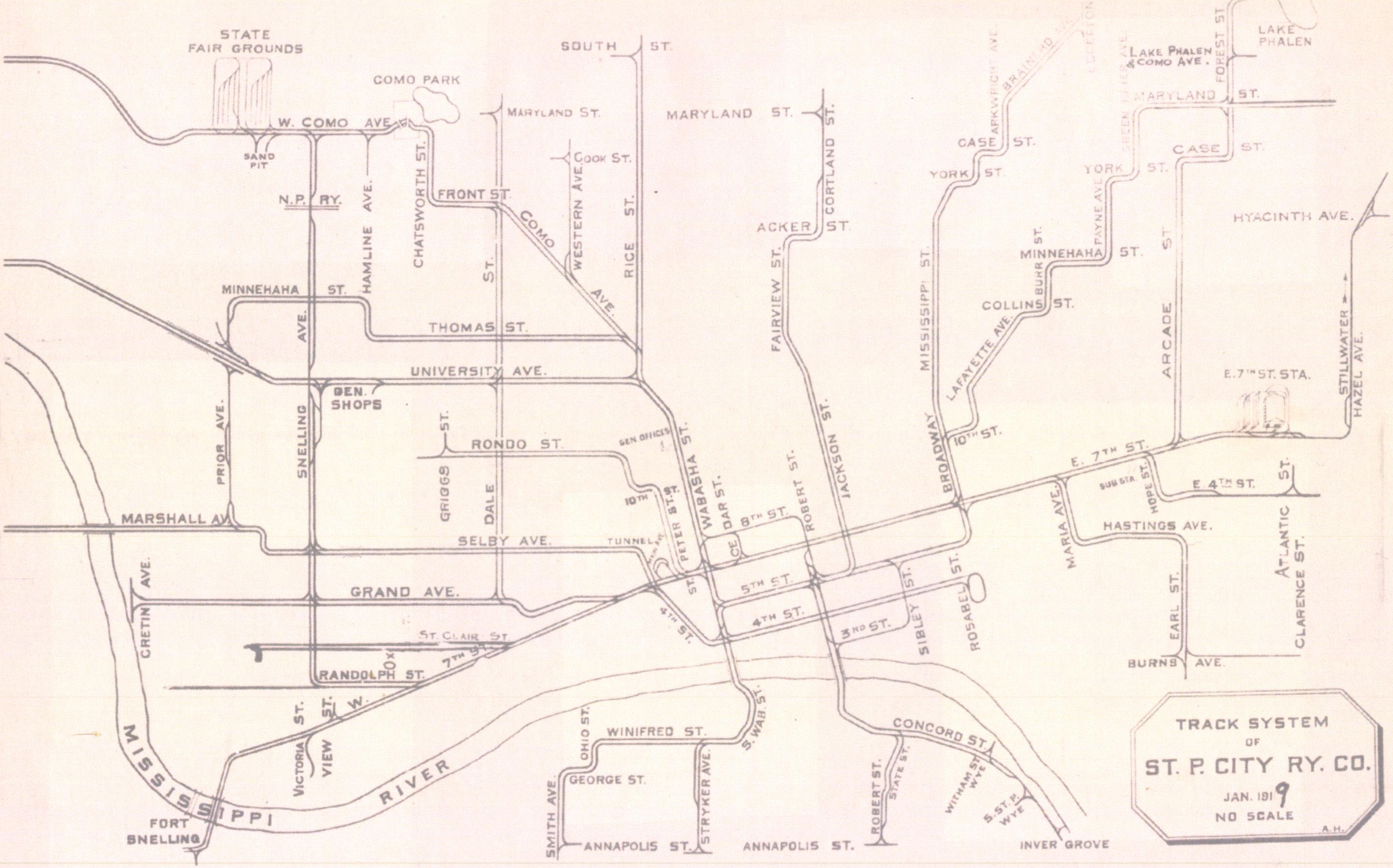


TRACK-SYSTEM
OF
M'P'L'S ST. RY. CO.
JAN. 1, 1930
NOT TO SCALE
M.E.W.

40TH AVE. N.E.
5TH ST. N.E.
LIMITS
TO CITY WATER WORKS
37TH AVE. N.E.
33RD AVE. N.E.
31ST AVE. N.E.
29TH AVE. N.E.
CENTRAL AVE.
WASHINGTON ST. N.E.
22ND AVE. N.E.
BROADWAY
MONROE ST. N.E.
JACKSON ST. N.E.
JACKSON AVE.
JOHNSON ST. N.E.
LOWRY AVE. N.E.
BROAD-WAY
STINSON BLVD.
O ST. N.E.
18TH AVE. N.E.
UNIVERSITY AVE. N.E.
E. SIDE STA.
1ST AVE. N.E.
4TH ST. N.E.
2ND
HENN-EPIN AVE. E.
8TH ST. S.E.
10TH AVE. S.E.
17TH AVE. S.E.
W ST. N.E.
INTER CAMPUS LINE
COMO AVE. S.E.
CENTRAL
2ND AVE. S.E.
UNIVERSITY SUB STA.
4TH ST. S.E.
15TH AVE. S.E.
HIGHST
1ST ST. S.
STEAM PLANT
WATER POWER STA.
MISSISSIPPI RIVER
WASHINGTON AVE. S.
5TH AVE. S.
BEACON ST. S.E.
OAK ST. S.E.
WASHINGTON AVE. S.E.
UNIVERSITY AVE. S.E.
FULTON ST. S.E.
ERIE ST. S.E.
DARTMOUTH AVE. S.E.
27TH AVE. S.E.
YALE AVE.
FRANKLIN AVE. S.E.
EMERALD ST. S.E.
CITY LIMITS
8TH ST. S.
10TH AVE. S.
7TH ST. S.
15TH AVE. S.
CEDAR AVE.
RIVERSIDE AVE.
MINNEHAHA AVE.
FRANKLIN AVE. E.
30TH AVE. S.
25TH AVE. S.
25TH ST. E.
SEABURY AVE
LAKE ST. E.
21ST AVE. S.
LAKE ST. STA.
27TH AVE. S.
MINNEHAHA SUB STA.
36TH AVE. S.
34TH ST. E.
CHICAGO AVE.
BLOOMINGTON AVE.
38TH ST. E.
CEDAR AVE.
35TH ST. E.
23RD AVE. S.
38TH ST. E.
37TH ST. E.
MINNEHAHA AVE.
42ND AVE. S.
41ST ST. E.
42ND ST. E.
RICE LAKE
28TH AVE. S.
45TH ST. E.
46TH AVE. S.
46TH ST. E.
46TH ST. E.
48TH ST. E.
50TH ST. E.
52ND ST. E.
34TH AVE. S.
50TH ST. E.
51ST ST. E.
MINNEHAHA FALLS LOOP
53RD ST. E.
53RD ST. LOOP
TO FT. SNELLING
LAKE NOKOMIS
56TH ST. E.
54TH ST. E.

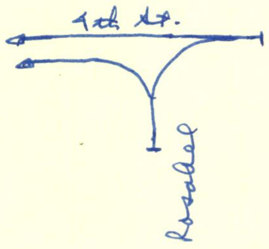
St. Paul City Railway

01-01-1920

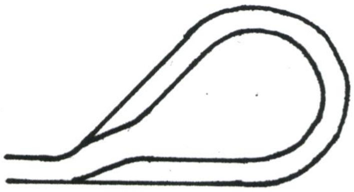

STATE FAIR GROUNDS
SAND PIT
W. COMO AVE.
COMO PARK
N.P. RY.
HAMLINE AVE.
CHATSWORTH ST.
FRONT ST.
MARYLAND ST.
COOK ST.
WESTERN AVE.
COMO AVE.
SOUTH ST.
RICE ST.
MARYLAND ST.
CORTLAND ST.
ACKER ST.
FAIRVIEW ST.
JACKSON ST.
MINNEHAHA ST.
THOMAS ST.
UNIVERSITY AVE.
GEN. SHOPS
SNELLING AVE.
PRIOR AVE.
GRIGGS ST.
DALE ST.
RONDO ST.
GEN OFFICES
10TH ST.
PETER ST.
WABASHA ST.
CEDAR ST.
8TH ST.
ROBERT ST.
MARSHALL AVE.
SELBY AVE.
TUNNEL
GRAND AVE.
CRETIN AVE.
ST. CLAIR ST.
RANDOLPH ST.
OXFORD
7TH ST.
W. 7TH ST.
VICTORIA ST.
VIEW ST.
5TH ST.
4TH ST.
3RD ST.
SIBLEY ST.
ROSABEL ST.
MISSISSIPPI RIVER
FORT SNELLING
OHIO ST.
WINIFRED ST.
GEORGE ST.
SMITH AVE.
STRYKER AVE.
ANNAPOLIS ST.
S. WABASHA ST.
ANNAPOLIS ST.
ROBERT ST.
STATE ST.
CONCORD ST.
WITHAM ST. WYE
S. ST. P. WYE
INVER GROVE
MISSISSIPPI ST.
BROADWAY
10TH ST.
LAFAYETTE AVE.
YORK ST.
CASE ST.
ARKWRIGHT AVE.
BRAINERD AVE.
COLLINS ST.
BURR ST.
MINNEHAHA ST.
PAYNE AVE.
GREENBRIER AVE.
YORK ST.
CASE ST.
MARYLAND ST.
LAKE PHALEN & COMO AVE.
FOREST ST.
LAKE PHALEN
ARCADE ST.
HYACINTH AVE.
STILLWATER HAZEL AVE.
E. 7TH ST. STA.
E. 7TH ST.
SUB STA.
HOPE ST.
E 4TH ST.
ATLANTIC ST.
MARIA AVE.
HASTINGS AVE.
EARL ST.
CLARENCE ST.
BURNS AVE.

TRACK SYSTEM
OF
ST. P. CITY RY. CO.
JAN. 1919
NO SCALE
A.H.

4th and Rosabel
circa 1908

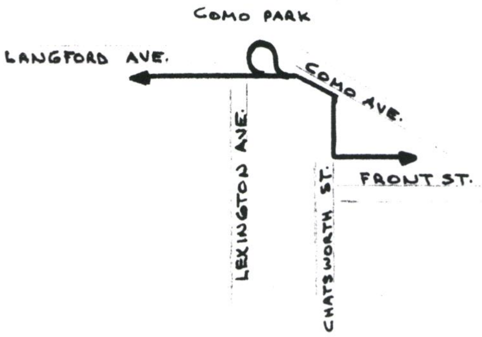

4th St.
Rosabel

ST. PAUL CITY RY.

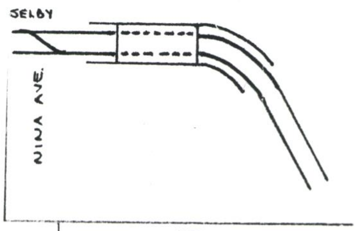


PHALEN PARK LOOP

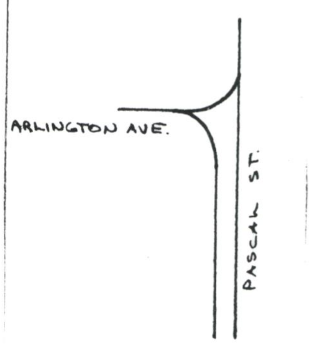
ST. PAUL CITY RY.
COMO PARK LOOP - 1900


COMO PARK
LANGFORD AVE.
COMO AVE.
LEXINGTON AVE.
CHATSWORTH ST.
FRONT ST.

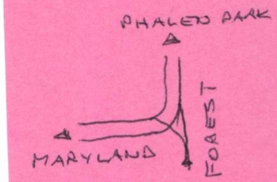
SELBY TUNNEL 1921


SELBY
NINA AVE.

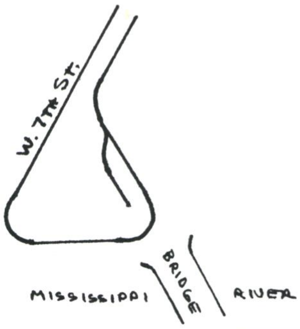
1924


ARLINGTON AVE.
PASCAL ST.

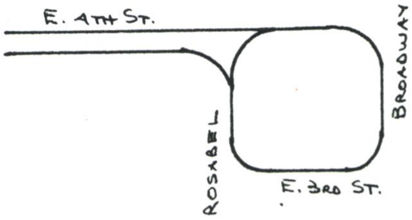
MARYLAND & FOREST
1905


PHALEN PARK
MARYLAND
FOREST

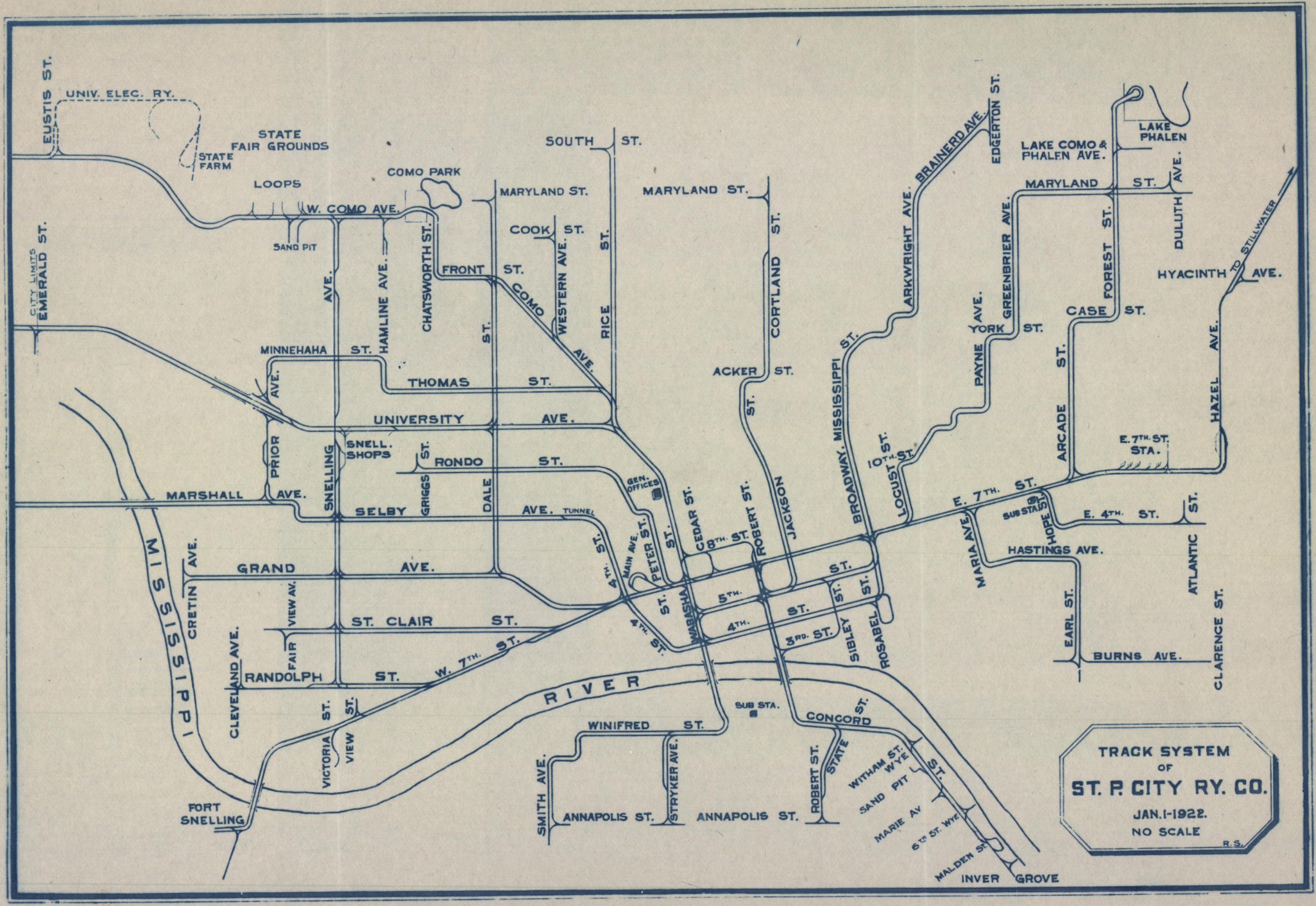
FORT SNELLING LOOP 1904


W. 7TH ST.
MISSISSIPPI
BRIDGE
RIVER

JAN. 1919


E. 4TH ST.
BROADWAY
ROSABEL
E. 3RD ST.

PV119ED
AVERY™



TRACK SYSTEM
OF
ST. P. CITY RY. CO.
JAN. 1-1922.
NO SCALE
R.S.

EUSTIS ST.
UNIV. ELEC. RY.
STATE FAIR GROUNDS
STATE FARM
LOOPS
COMO PARK
W. COMO AVE.
SAND PIT
CITY LIMITS
EMERALD ST.
SOUTH ST.
MARYLAND ST.
MARYLAND ST.
COOK ST.
FRONT ST.
COMO AVE.
WESTERN AVE.
RICE ST.
CHATSWORTH ST.
HAMLINE AVE.
AVE.
ST.
CORTLAND ST.
ACKER ST.
BRAINERD AVE.
EDGERTON ST.
ARKWRIGHT AVE.
MISSISSIPPI ST.
BROADWAY
LAKE PHALEN
LAKE COMO & PHALEN AVE.
MARYLAND ST.
DULUTH AVE.
FOREST ST.
GREENBRIER AVE.
HYACINTH AVE.
TO STILLWATER
PAYNE AVE.
YORK ST.
CASE ST.
HAZEL AVE.
ARCADE ST.
MINNEHAHA ST.
THOMAS ST.
UNIVERSITY AVE.
PRIOR AVE.
SNELLING AVE.
SNELL. SHOPS
GRIGGS ST.
RONDO ST.
DALE ST.
GEN. OFFICES
MARSHALL AVE.
SELBY AVE.
TUNNEL
4TH. ST.
MAIN AVE.
PETER ST.
ST.
CEDAR ST.
8TH. ST.
ROBERT ST.
JACKSON
10TH. ST.
LOCUST ST.
E. 7TH. ST.
E. 7TH. ST. STA.
SUB STA.
HOPE
E. 4TH. ST.
ST.
MARIA AVE.
HASTINGS AVE.
ATLANTIC
CRETIN AVE.
GRAND AVE.
VIEW AV.
ST. CLAIR ST.
FAIR
CLEVELAND AVE.
RANDOLPH ST.
W. 7TH. ST.
4TH. ST.
WABASHA
5TH.
4TH. ST.
3RD. ST.
ST.
ST.
SIBLEY
ROSABEL
ST.
EARL ST.
BURNS AVE.
CLARENCE ST.
MISSISSIPPI
RIVER
VICTORIA ST.
VIEW ST.
FORT SNELLING
SUB STA.
WINIFRED ST.
SMITH AVE.
STRYKER AVE.
ANNAPOLIS ST.
ANNAPOLIS ST.
CONCORD ST.
STATE
ROBERT ST.
WITHAM ST. WYE
SAND PIT
MARIE AV
6TH. ST. WYE
MALDEN ST.
ST.
INVER GROVE

Minnesota Transfer Ry.

St. Paul City Ry.

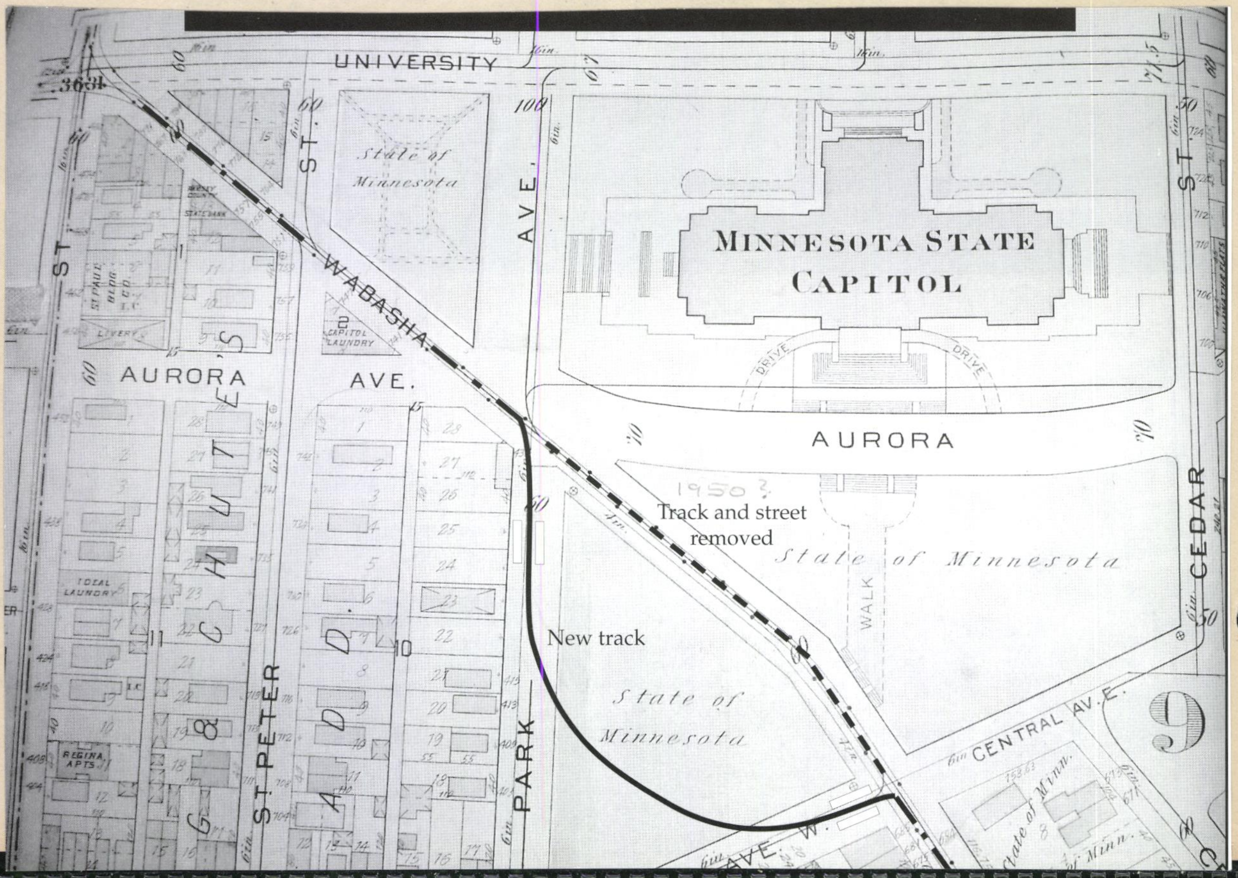
Prior Ave.

1905	MT Ry.	713 LF
1905	SPCR	161 LF
		874 LF
1906	MT Ry.	389 LF
		389 LF

Univ. of Minn Farm School 1916

MT Ry.	215 LF
U of M	1085 LF
	1300 LF

2nd Track 100% U of M ownership.


UNIVERSITY
ST.
WABASHA
State of Minnesota
AVE.
MINNESOTA STATE CAPITOL
DRIVE
DRIVE
AURORA
AURORA AVE.
CHUTE'S ADD.
LIVERY
CAPITOL LAUNDRY
IDEAL LAUNDRY
REGINA APTS
ST. PETER
PARK
WALK
State of Minnesota
State of Minnesota
CEDAR ST.
CENTRAL AV. E.
AVE. W.
9

1950?
Track and street removed

New track

guard timber along the edges of the two wagon roads. The latter will be paved with wooden block paving.

The accompanying illustrations show the method of constructing the bridge and of raising the floor and tracks so as to permit the permanent structure to be placed in position. Two of the permanent spans are now in place, and during the eight months of work the car traffic has been shut off but four days. During that period passengers cross on a temporary foot-path. It is expected that the work will be completed by the first of next year. The bridge was designed by F. A. Koetitz, chief engineer of the Pacific Construction Company, and is being erected under the direct supervision of F. M. Butler, secretary of that company. The cost of the entire work will be $400,000, and will be borne by the city, as it receives its remuneration from the City & Suburban Railway Company for the railway service through a rental charge of $1,000 a month.

1904

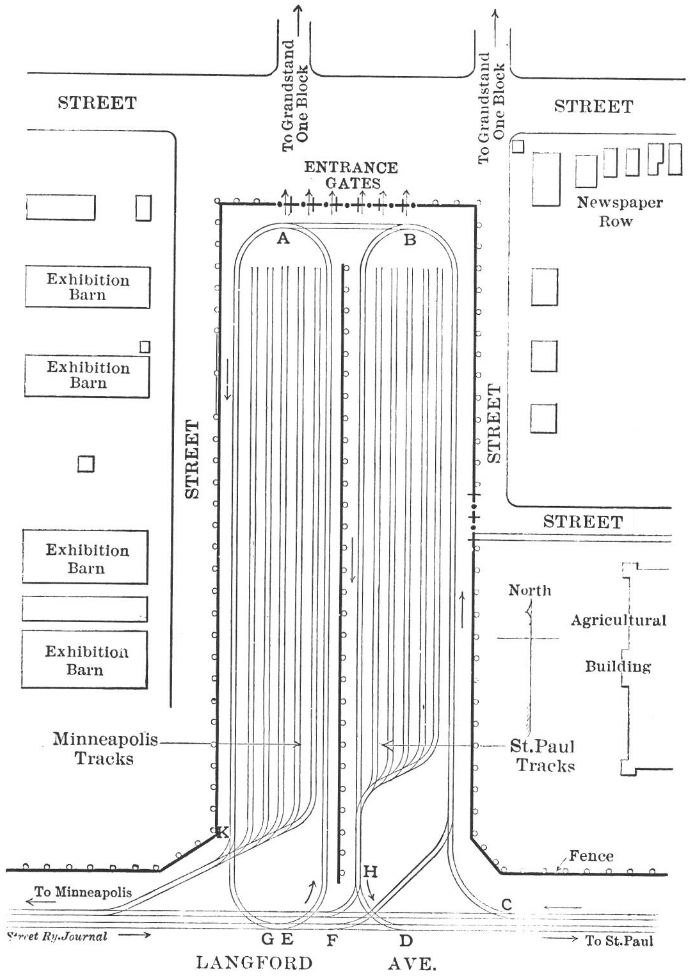
NEW TERMINAL FACILITIES AT THE MINNESOTA STATE FAIR GROUNDS

The Twin City Rapid Transit Company, operating in St. Paul and Minneapolis, has recently completed some very interesting new terminal facilities at the Minnesota State Fair Grounds. The State Fair is an annual occurrence of great attraction to the citizens of Minnesota and its neighboring States, as it illustrates the agricultural, manufacturing and commercial resources of the Northwest in a way which is perhaps more effective than any other method of exploitation. In recent years the great crowds attending the Fair have made the problem of transportation exceedingly difficult, as the electric railway facilities were confined to the Langford Avenue double track on the Como-Harriet line of the company.

All the buildings on the Fair Grounds are of a permanent character, and this year an important addition to the existing layout was found in the new Manufactures' Building, whose erection was made possible by the legislative appropriation of $30,000, secured by the Northwestern Manufacturers' Association. This building is the most substantial structure on the grounds, being of pressed brick, 120 ft. x 160 ft., with a stone foundation, concrete floor, and galvanized iron roof, supported by steel trusses. The architect was C. H. Johnston, of St. Paul. This and other additions to the attractions of the Fair, led the officials in charge to expect an unusually heavy traffic during the week of its opening and operation, Aug. 29 to Sept. 3, inclusive, and accordingly a space covering nearly 4.9 acres was set apart for improved street railway terminal facilities.

The State Fair Grounds are located in the Midway district of St. Paul, slightly west of Como Park, and are reached from either St. Paul or Minneapolis by the Como-Harriet line of the Twin City Company. The new terminal has wisely been laid out at a side, rather than the main entrance of the grounds, so that a considerable part of the traffic coming from St. Paul may split from the terminal traffic through the passing of the main entrance by the cars before the terminal is entered. A considerable amount of carriage and pedestrian traffic at the main entrance was thus freed from the congestion which would have resulted if all the street railway, foot and vehicle traffic had been handled at one place.

The accompanying diagram shows the general plan of the terminal tracks, which occupy a section of the Fair Grounds [illegible]00 ft. long x 300 ft. wide, approximately. The area is divided into two loops, A and B, each of which encloses five parallel spur tracks for the storage of cars in anticipation of the enormous rush of traffic which follows the conclusion of the afternoon and evening performances on the race track and at other places on the grounds. A fence encloses the sides of the terminal, entrance and exit to and from the grounds being through ticket booths and turnstiles at the north end of the enclosure. In general, Minneapolis traffic is handled by the "A" loop and spur tracks, St. Paul being cared for by the "B" loop and spurs. A fence separates the two sections, in the middle of the enclosure. In ordinary operation through cars from St. Paul to Minneapolis are deflected to the terminal at the point C; they pass up the east side of the loop "B," discharge and load, and pass on to Minneapolis either by the west side of the loop A or the loop B, depending upon the traffic on the tracks at any particular time. Local cars from St. Paul to the Fair Grounds generally follow the same course, returning, however, to the eastbound Como-Harriet track at the point D. Through cars from Minneapolis to St. Paul take the switches at E or F, according to the conditions in the terminal, and after traversing the loop corresponding, return to the main eastbound track at point G or point D. Local cars from Minneapolis to the grounds follow the same course, according to circumstances, returning to the westbound main line by the switches at H or K. The capacity of the spur tracks is about 120 cars, and these, added to perhaps thirty cars on the loops, give a total of 150 cars that are ready for instant occupancy at the close of the afternoon and evening performances. The cars in St. Paul and Minneapolis run in one direction only, being single-ended, so that it is necessary for stored cars to back upon the stub tracks before taking their loads. This, however, was done before the rush of traffic comes. The spaces between the tracks are laid out in gravel and cinder walks.



NEW STREET RAILWAY LOOPS AND STORAGE TRACKS AT THE MINNESOTA STATE FAIR GROUNDS

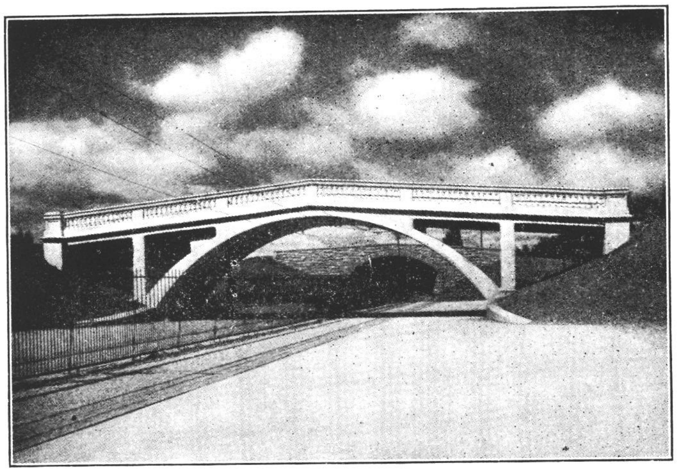
The limited space available crowded the switches somewhat, but the main line movements are so flexible that little trouble was experienced on this score. A special force of inspectors and starters was appointed to supervise the traffic in detail, and the facilities planned were found capable of handling at least 15,000 to 20,000 passengers per hour, if not more. It was found that the stub tracks met with special favor among patrons with families, women and children, who preferred to walk a short distance to make sure of seats, to standing in the more crowded cars upon the loops.

◆

NEW BRIDGES AT COMO PARK, ST. PAUL

The Twin City Rapid Transit Company has recently completed two new bridges at Como Park, St. Paul, which are of considerable interest both from an architectural and operating standpoint. Como Park is located on the double-track Como-Harriet line of the company, and is one of the most popular resorts of the Twin Cities, being situated between Minneapolis and St. Paul's thickly settled district, a 5-cent fare being charged from either place to the park. On account of the traffic obtaining during busy hours it was found necessary to improve the existing facilities for handling the crowds, and in the early part of the summer the bridges were placed in service, constituting, with the platform arrangements adjoining, a thoroughly modern type of way station.

One of the bridges is devoted principally to carriage and automobile traffic, the other taking care of the foot passengers. The foot-bridge is the prominent one in the accompanying illustration. Both were built primarily to avoid any crossing of tracks at grade by visitors to the park.



FOOT BRIDGE AND CARRIAGE BRIDGE BUILT BY THE TWIN CITY RAPID TRANSIT COMPANY AT COMO PARK

The wagon bridge is about 150 ft. west of the "foot"-bridge, so called, and is 100 ft. long and 50 ft. wide, with a 21-in. parapet of sandstone at each side, the parapet being about 3 ft. high above the roadway. The roadway is about 40 ft. wide, leaving space for two gravel sidewalks beside the parapet, each 5 ft. wide. The arch of the bridge is about 40 ft. wide and 21 ft. high, approximately. The bridge is of concrete-steel construction, the facing of the side walls and inner surface of the abutments being of sandstone masonry. Two qualities of concrete were used in the construction of the bridge, No. 1 and No. 2, respectively. The composition of each was:

No. 1

American Portland cement	1 part
Sand	2 parts
Broken stone	4 parts

No. 2

American Portland cement	1 part
Sand	3 parts
Broken stone	5 parts

No. 1 was used for the arch, piers and beams, and No. 2 for the abutments. The cement was required to show a tensile strength of 600 lbs. after seven days, and when mixed with sand in the proportion of one part cement to two parts sand by measure it showed a tensile strength of 200 lbs. per square inch in seven days. Clean, coarse, sharp sand was used and screened before mixing, and the crushed stone employed was native blue limestone. The facing of the side walls and i[illegible]r surface of the abutments is bonded into the concrete ba[illegible] with headers extending at least 18 ins. back from the face, one-quarter of the facing being headers. The backing of the side walls is ordinary rubble, and the mortar used in the joints and arch ring was composed of one part cement to two parts sand. All the other mortar, except that used in pointing, was of one part cement to three parts sand.

The reinforcement of the wagon bridge consists of sixteen steel ribs imbedded in the concrete of the arch. These ribs are made up of 5-in. 9¾ lbs. per foot I-beams bent to conform to the arch curvature. They are in two pieces and are tied together with five lines of ¾-in. round rods extending entirely across the bridge and secured to the arch ring stone with dowels at right angles to the face of the joint in the arch ring. The arch ribs are anchored into the abutments by being riveted to 2-in. by 2-in. by ¼-in. angles. After the completion of the arches and spandrels, and before any fill was put in, the top spaces of the arches, piers and abutments and the lower 6 ins. of the spandrel walls were coated with a heavy coat of semi-liquid mortar consisting of one part cement, one-half part slaked lime and three parts sand, spread to leave a smooth finish, and after this set hard it was given a heavy coat of pure cement grout.

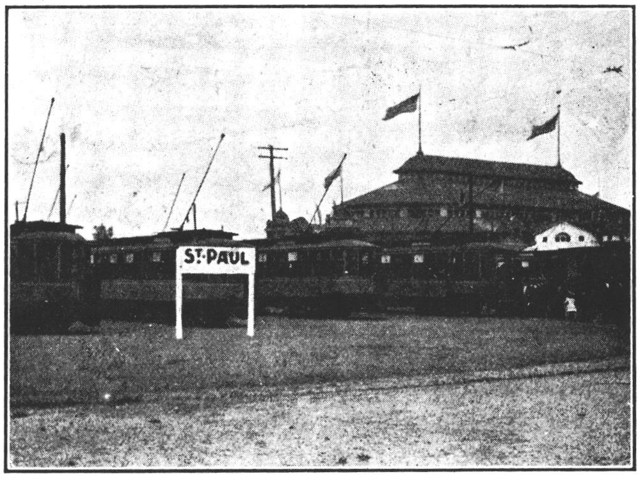
The foot-bridge is approximately 88 ft. long over the top, with a 21-ft. arch. The width of the walk is 15 ft., each side sloping downward from a center line. Each side is protected by a handsome concrete parapet 4 ft. 10 ins. high and about 14 ins. wide at the railing. The parapets terminate in f[illegible]r corner posts 4 ft. by 3 ft. 6 ins. in cross section. Three lon[illegible]dinal grooves for drainage purposes are cut in the bridge walk, the foot-bridge likewise being of concrete-steel construction. Parallel grooves are also cut in the walk several inches apart for drainage and the prevention of slippage by pedestrians. These grooves are staggered in the two outer rows. The same quality of concrete was used as in the wagon bridge, No. 1 being used for the arch, piers and beams, and No. 2 for the abutments. Native blue limestone was also employed. The steelwork is of I-beams, five 7-in. ribs being imbedded in the concrete of the arch and anchored into the abutment by being riveted to two 2-in. by 2-in. by ¼-in. angle irons extending across the bridge. The waterproofing was carried out as on the wagon bridge.

Between the two tracks which run through both bridges is a double picket fence of bar-iron 7 ft. high and set 3 ft. from the nearest rail. This fence extends from the end of the wagon bridge to the end of the curve that begins at the east end of the concrete platform which receives passengers as they alight from the cars on either track. This fence divides the east and westbound traffic, passengers coming from Minneapolis to Como Park being obliged to cross the foot-bridge in order to enter the park, while passengers going to St. Paul from the park likewise cross the foot-bridge. Matters are made even, however, by the westbound track, which discharges passengers from St. Paul to Como without the necessity of crossing the bridge, and takes Minneapolis passengers from Como in the same way. A resident of either city who goes to Como is th[illegible]s obliged to cross the bridge but once. The picket fence [illegible] about 100 yds. down the track to the east and perhaps 180 ft. to the west, so that there is no chance for evading the foot-bridge and making a dangerous grade crossing by way of short cuts. In the middle of the picket fence is an inconspicuous padlocked gate 26 ins. wide for the use of employees.

1907

HANDLING TRAFFIC AT THE MINNESOTA STATE FAIR

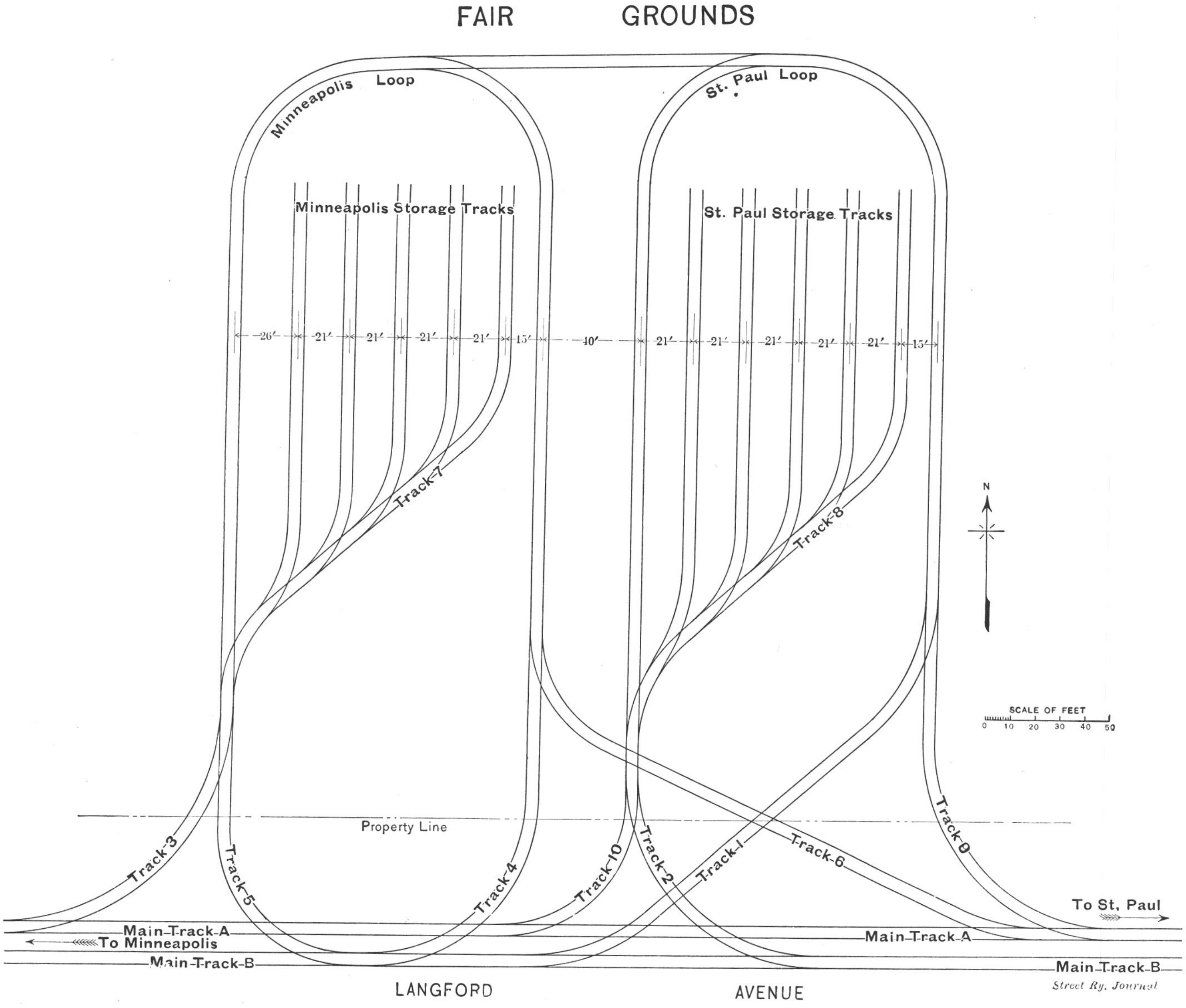
To handle the immense crowds attending the Minnesota State Fair during the first week of every September the Twin City Rapid Transit Company, which operates the street car system of Minneapolis and St. Paul, has built an extensive and interesting terminal station at the fair grounds. During the six days of the fair this year, from Sept. 2 to 7, the company carried approximately 250,000 people to and from the grounds; the heaviest single day was Sept. 2, Labor Day, when the attendance mounted to 80,000.



ST. PAUL CARS ON STORAGE TRACKS, WITH CAR ON THE RIGHT UNLOADING

The fair grounds are located midway between Minneapolis and St. Paul on the Como-Interurban car line. As is seen from the accompanying plan, the terminal consists of two great loops, enclosing five storage tracks between each loop. This duplicate arrangement is adopted to separate the Minneapolis and St. Paul traffic; the St. Paul cars enter and leave on the east or St. Paul loop, while the Minneapolis cars use the west or Minneapolis loop. Large signs direct the passengers to the proper points and absolutely no confusion occurs. The main loops are so connected to the two main tracks that cars can be run in and out of the terminal in almost any conceivable manner, making a very flexible arrangement.

The method of handling and dispatching cars in and out of the terminal is as follows: Through service, running on a five-minute schedule, is maintained between Minneapolis and St. Paul. These cars come from Minneapolis on main track B and enter the St. Paul loop by means of track 1. They proceed around this loop, stopping at the upper end to receive and discharge passengers, and then go out to


FAIR GROUNDS
Minneapolis Loop
St. Paul Loop
Minneapolis Storage Tracks
St. Paul Storage Tracks
26′
21′
21′
21′
21′
15′
40′
21′
21′
21′
21′
21′
15′
Track 7
Track 8
N
SCALE OF FEET
0
10
20
30
40
50
Property Line
Track 3
Track 5
Track 4
Track 10
Track 2
Track 1
Track 6
Track 9
To St. Paul
Main Track A
To Minneapolis
Main Track B
Main Track A
Main Track B
LANGFORD AVENUE

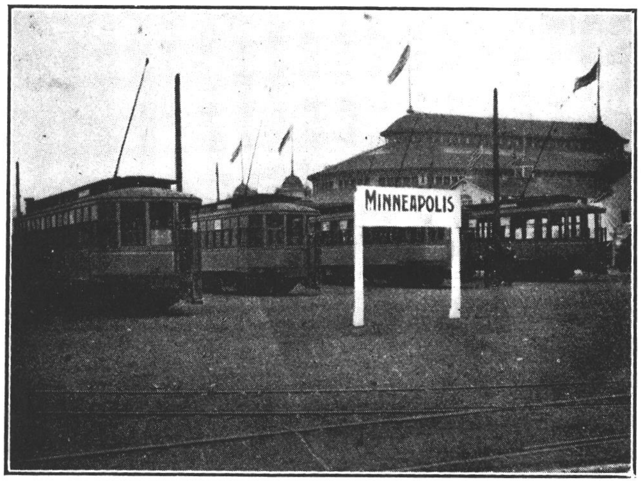
Street Ry. Journal

GENERAL TRACK PLAN AT THE MINNESOTA STATE FAIR GROUNDS main track B again via track 2. Through cars from St. Paul enter the Minneapolis loop from main track A via track 6, proceed around the loop, stopping at the loading platform at the upper end as described above and then leave the terminal over track 3 which switches the car again on to main track A.

Local cars are run from both cities on a 1¼-minute schedule. The Minneapolis cars enter from main track B via track 4 and proceed to the unloading platform, from which they return either to Minneapolis over track 3 or enter the storage yard via ladder track 7. St. Paul cars are run around the St. Paul loop in a similar manner. This method gives a continuous, uninterrupted stream of both through and local cars, all moving in the same direction on each loop; the traffic from each city is completely separated, an important feature in operating a terminal of this nature. While under normal conditions the cars are dispatched as described above, the main line connections are purposely arranged to permit any variation from the usual procedure that an emergency may dictate.

Two or three repair men and a dispatcher is all the operating force necessary at the terminal. A repair car is also maintained in readiness for any emergency.

Twin City standard cars are designed to load and unload from the rear platform only. At the fair terminal, however, special steps were provided so that passengers were unloaded from both platforms at once. Ninety-five per cent of the travel was either in one direction or the other. By using both platforms for unloading or loading, a car could be emptied or filled in practically one minute.



CARS READY TO LEAVE THE MINNEAPOLIS TRACKS

The fair exodus reaches a maximum at 5 and 10 p. m. To provide for these rush periods from thirty-five to fifty cars are stored on the Minneapolis tracks and from twenty-five to thirty on the St. Paul tracks. Cars are dispatched from these storage tracks in order of their occurrence, so that during the rush periods one-quarter-minute service is maintained to Minneapolis and St. Paul. This amounts to 240 cars per hour to each city. Each car carries about 100 passengers, which means that the maximum number of passengers moved per hour to each city is 24,000.

This record was actually attained several times during the week, and the traffic was handled without undue crowding or congestion. Every passenger did not get a seat, but this could not be expected. The company made an honest effort to provide and keep moving a sufficient number of cars to carry the crowds. By means of this terminal this was accomplished throughout the week without a single hitch.

FIREPROOF CAR HOUSE AND REPAIR SHOP FOR THE SPRINGFIELD CONSOLIDATED RAILWAY COMPANY

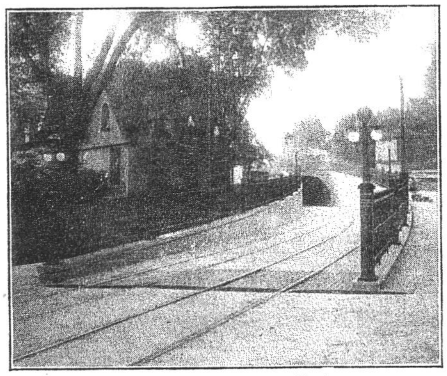
The Springfield Consolidated Railway Company, of Springfield, Ill., recently secured fifteen acres in the southern end of that city, where it is erecting a model car house and repair shop. This will be used as an operating depot and will include offices and store rooms. The latter will adjoin the car house and also contain locker and club rooms with bathing and toilet facilities for the trainmen. The building will be 216 ft. long and 107 ft. 6 ins. wide, but sufficient space is reserved for future extensions to the car house now under way. In the meantime extra cars will be stored in one of the company's old structures.

The installation is a notable one for a company of this size in view of the care given to secure a durable and fireproof construction. The walls are of hard brick with concrete foundations and the pits and floors, also of concrete throughout, except that in the carpenter and paint shop, the concrete floor is overlaid by ⅞-in. maple on 4-in. x 4-in. yellow pine stringers. The car house is divided into two sections by a 13-in. wall with a fire tile coping above the roof. The openings in this wall are protected by standard fire doors. The larger section, which is 50 ft. 3 ins. wide, is known as a "car service shed." It is furnished with three dead-end tracks and one through-pit track extending 196 ft. The other section is 37 ft. wide and contains the machine, carpenter and paint shops. Two dead-end tracks extend through this part of the building with a 30 ft. and a 70-ft. pit in the machine shop. The division walls between the shops are 13 ins. thick and have the track openings protected by standard fire doors. All of the track doors and windows in the car house are made with wire glass.

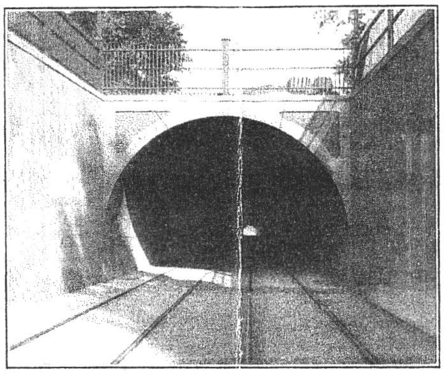
The roof is of reinforced concrete supported on reinforced concrete beams. Over the shop portion the beams are 20 ins. wide and 30 ins. deep with a reinforcement of three 1¾-in. x 3¾-in. Johnston bars. The beams over the car storage section are 12 ins. wide and 24 ins. deep with two 1-in. x 3-in. bars; these beams are supported at the center of this bay on 12-in. square concrete columns, reinforced by four 1½-in. x 1½-in. bars. The bottoms of all beams have bolted thereto 2-in. x 4-in. oak planking for trolley supports and lightning fixtures. The roof slabs are 4 ins. thick and are reinforced by ½-in. bars laid 16 ins. centers and one layer of 4-in. x 6-in. Nos. 9 and 11 wire fabric. The concrete mixture used in the roof work consists of one part Portland cement, two parts sand and five parts of crushed screened limestone. The roof is capable of bearing a live load of over 50 lbs. per square foot. It is finished with five layers of tar felt.

Aside from the doors and windows of the car house, plenty of illumination is secured through the wire glass skylights. There are six 4-ft. x 12-ft. lights in the roof of the bay section, but in the shop section there are four over the pits alone; there are also two lights in the carpenter shop and one 4-ft. x 20-ft. transverse skylight in the paint shop. The paint shop, being at the end of the building, also has side lights. The car house is ventilated by four 48-in. Burt roof ventilators, two in each bay. Inside fire protection is secured by four 2-in. fire hydrants placed as shown on the plan. These are supplied with water from the city waterworks through a 4-in. main. The general scheme of floor and pit drainage is clearly indicated on the plan and section.

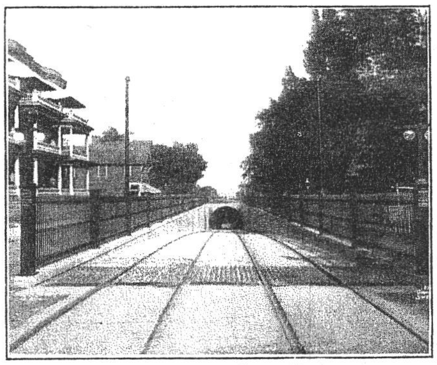
The third section of the installation is devoted to miscellaneous purposes and extends the full length of the car house proper, but is only 20 ft. wide. It will be noted that



Selby Subway — Lower End



Selby Subway — Upper Entrance



Selby Subway — Upper End

The Rail Joint Company
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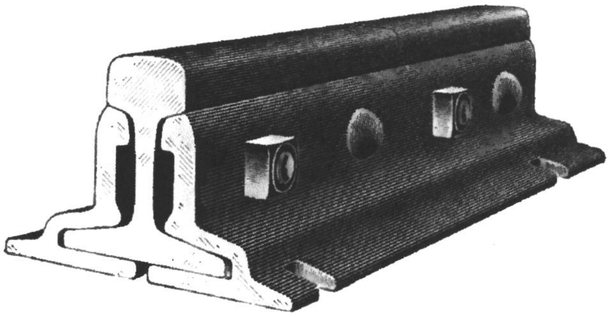
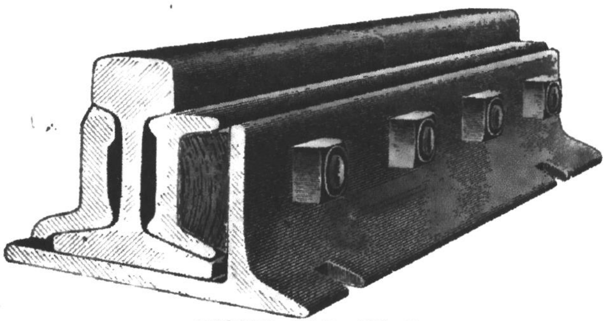
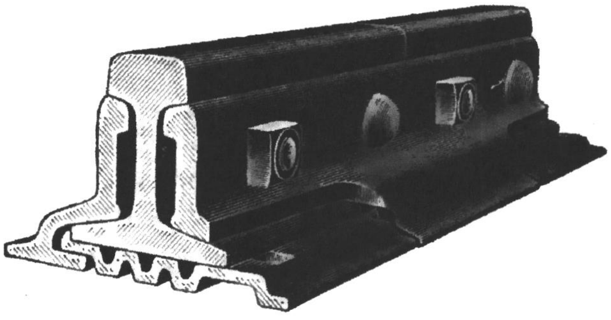


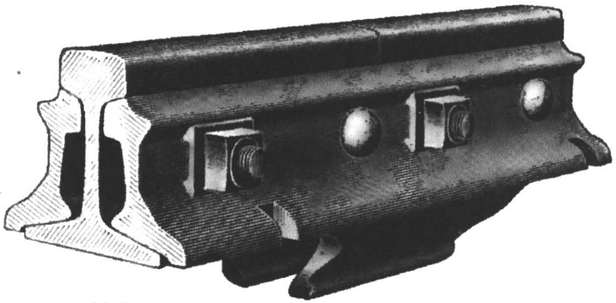
CONTINUOUS RAIL JOINT



WEBER RAIL JOINT



WOLHAUPTER RAIL JOINT



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Minneapolis & St. Paul
Suburban Railway
Summary of Track
Mileage and Construction Costs

Minneapolis & St.Paul Suburban Railway
Cost of Road and Equipment MRR&WC 6-30-1910
Estimated to 6-30-1908; actual thereafter. Includes St.Louis Park, Robbinsdale, South St.Paul

	Owned	Leased (Minnetonka)
Road		
Engineering and Superintendence	40,466	6,260
Right of Way	123,968	
Other Land used in Operations	5,629	
Grading	131,828	218
Ballast	47,675	
Ties	134,020	6,201
Rails, Rail Fastenings and Joints	318,385	15,480
Special Work	13,686	899
Paving	800	
Track Laying and Surfacing	247,568	19,525
Roadway Tools	5,955	
Bridges, Trestles and Culverts	72,492	267
Crossings, Fences, Cattle Guards, Signs	16,156	571
Interlocking and Other Signals	369	
Telephone and Telegraph Lines	27,452	3,325
Poles and Fixtures	42,973	6,649
Underground Conduits	9,953	
Transmission System	51,667	7,879
Distribution System	156,322	24,084
Substation Buildings	41,324	
Shops and Carhouses	2,634	
Stations, Waiting Rooms, Misc. Buildings	4,139	219
Docks and Wharves	41,100	
Substation Equipment	148,054	
Park and Resort Property	488,992	
Cost of Road Purchased (StL Park, Robbinsdale)	70,000	
Total	2,243,607	91,577
Equipment		
Cars	72,510	
Electric Equipment of Cars	89,680	
Other Rail Equpment	8,200	
Total	170,390	
General		
Law Expenses	83	
Miscellaneous	72,452	2,134
Total	72,535	2,134
Grand Total	2,486,532	93,711

POLY-VU AVERY™

Minneapolis & St.Paul Surburban Railroad
Track Mileage from MRR&WC Reports

	6/30/1911	6/30/1912 6/30/1913
OWNED		
Lake Minnetonka Division.		
31st St. & Hennepin Ave. to Hopkins	13.30	13.30
Deephaven Jct to Manitou Jct	16.64	16.64
Wildhurst Loop	0.32	0.32
Hopkins local line	0.25	0.25
St.Lous Park line	1.99	1.99
Robbinsdale line	1.72	1.72
Sdtillwater Division		
7th St. & Duluth Ave. to Stillwater Union Depot loop	18.64	18.64
Owen St. line	1.50	1.50
Wilkin St. line	0.59	0.59
South Stillwater line	3.69	3.69
Mahtomedi line	1.69	1.69
White Bear line	4.40	4.40
South St. Paul line	6.79	6.79
Sidings	2.37	2.11
Subtotal	73.89	73.63
LEASED		
Lake Minnetonka Division.		
Hopkins Jct. to Deephaven Jct.	2.76	2.76
Deephaven Jct to Deephaven	6.25	6.25
Manitou Jct to Tonka Bay	1.50	1.50
Tonka Bay spur track	0.06	0.06
Subtotal	10.57	10.57
OPERATED UNDER AGREEMENT		
Minneapolis St. Ry.		
6th St. loop to 31st St. & Hennepin Ave.	5.82	5.42
29th St. & Hennepin Ave. to City Limits (SLP line)	1.69	2.11
32nd Ave. N. & Penn Ave. N. to City Limits (Robb. Line)	0.50	0.50
St.Paul City Ry.		
St.Paul loop to 7th St. & Duluth Ave.	5.36	5.36
Subtotal	13.37	13.39
TOTAL	97.83	97.59

Minneapolis & St.Paul Suburban Railway/Railroad						
Track Mileage from MRR&WC Reports						
		6/30/1909	6/30/1910	6/30/1914	6/30/1915	
Lake Minnetonka line						
	6th & Hennepin to France Ave.	10.92				
	6th & Hennepin to 31st &Hennepin		5.82	5.42		
	31st & Hennepin to France Ave.				5.98	
	France Ave. to Hopkins	7.70			7.98	
	31st & Hennepin to Hopkins		13.30	14.04		
	Hopins to Deephaven Jct	2.76	2.76	2.47	2.73	
	Deephaven Jct to Manitou	16.64	16.64	18.10	17.90	
	Manitou to Tonka Bay	1.44	1.50	1.52	1.63	
	Wildhurst Loop	0.32	0.32	0.34	0.34	
	Tonka Bay spur	0.06	0.06	0.06	0.06	
	Hopkins local line	0.25	0.25	0.33	0.33	
	Deephaven Jct to Deephaven	6.00	6.25	6.25	6.26	
		46.09	46.90	48.53	43.21	
Stillwater line						
	Downtown St.Paul to Larpenteur Ave.	9.22				
	Larpenteur Ave. to Stillwater Union Depot	15.12			15.75	
	Downtown St.Paul to Duluth Ave.		5.36	5.36		
	Duluth Ave. to Larpenteur Ave.				3.76	
	Duluth Ave. to Stillwater Union Depot		18.64	19.47		
	Owen St. line	1.50	1.50	1.51	1.51	
	Wilkin St. line	0.59	0.59	0.60	0.66	
	South Stillwater line	3.69	3.69	3.70	3.73	
	Mahtomedi branch	1.69	1.69	1.69	1.69	
	White Bear branch	4.40	4.40	4.44	4.52	
		36.21	35.87	36.77	31.62	
St.Louis Park line						
	29th & Hennepin to City Limits	1.60	1.69	2.11	Not Listed	
	City Limits to St. Louis Parkl	1.97	1.99	2.00	2.06	
		3.57	3.68	4.11	2.06	
Robbinsdale line						
	Penn Ave. N. to City Limits	0.50	0.50	0.50	0.50	
	City Limits to Robbinsdale	1.72	1.72	1.72	1.85	
		2.22	2.22	2.22	2.35	
South St. Paul line						
	Downtown St.Paul to City Limits	5.08	Not Listed	Not Listed	Not Listed	
	City Limits to Inver Grove	6.79	6.79	6.85	6.90	
		11.87	6.79	6.85	6.90	
Columbia Heights line		Not Listed	Not Listed	1.53	1.53	
Extras, Sidings, etc.		2.37	2.28	Not Listed	Not Listed	
Total		102.33	97.74	100.01	87.67	
						6/30/1916
First Track		72.54	70.48	71.31	52.57	52.57
Second Track		27.36	24.84	24.40	13.00	13.21
Sidings		2.43	2.42	4.30	3.23	3.23
Carhouse Track		Not Listed	Not Listed	Not Listed	0.14	0.14
		102.33	97.74	100.01	68.94	69.15

Minneapolis Street Railway
Harriet Right-of-Way
Track Mileage 1-1-1922

		Miles
Tangent Track		
31st St. from Hennepin Ave. to Right-of-Way (*)		0.234
(1234.6 LF Dirt Paving, Hennepin Ave. to Irving Ave.)		
Right-of-Way from 31st St. to France Ave. (city limits)		5.092
(Type B-2 0.26 Type B-2 Open 4.832)		
		5.326
Miscellaneous Track		
Right-of-Way - Upton to Xerxes siding		0.127
Right-of-Way at France Ave.Loop		0.054
		0.181
Special Track		
France Ave.Loop	802.1 LF	0.152
Harriet Loop	514.7 LF	0.098
Upton Ave.	183.7 LF	0.035
Xerxes Ave/	356.0 LF	0.067
		0.352
Total		5.859

(*) Land Description

A strip of land 33 ft. wide in the center of 31st St. extending from the easterly line of Hennepin Ave. to a point 375 ft. east of a point in the center of 31st St., which point is south of the center line of the alley in Block 24, Calhoun Park, thence upon a curve having a 400 ft. radius southwesterly to a point where said 33 ft. strip intersects the southerly line of 31st St. 32,505 sq. ft.

Donated to the City of Minneapolis in 1904:
31st St. from west line of Nicollet Ave. to east line of Hennepin Ave.
33 ft. wide x 5,198 ft. long.

Minneapolis & StPaul Sububan Railroad
Local Suburban Division
Track Mileage 1-1-1926

	St Louis Park line (1)	Robbins-dale line (2)	Columbia Hts. Line (3)	South St Paul line (4)
Tangent Track				
5 3/4" 60# T Rail			0.714	
5"80# T Rail	1.901			7.807
80# ASCE Rail		1.654	0.578	
7" 91# T Rail			0.015	0.606
Subtotal	1.901	1.654	1.313	7.693
Tangent Track at ends of Wyes	0.042	0.034	0.072	0.049
Special Track (Wyes)	0.066	0.066	0.156	0.338
Special Track (Sidings)	0.065			
Carhouse Tangent Track & Special Track				0.594
Guarded Curve Track	0.033	0.092		0.143
Miscellaneous Track				0.045
Total Track	2.107	1.846	1.541	8.862

(1) W. Lake St. and France Ave. to W. Lake St. and Brownlow Ave.
(2) W. Broadway and France Ave. to W. Broadway (Crystal Lake Ave.) and 44th Ave. N.
(3) 37th Ave. N.E. and Central Ave. N.E. to 40th Ave. N.E. and 5th St. N.E.
(4) Concord St. from Annapolis St. to Linden St. (Inver Grove).

Minneapolis St. Ry. Valuation 1-1-1922:

		Single Track Miles
Fort Snelling Line (from 54th St.)		
Main line	3.199	
Spur line	1.053	
Total		4.252
St. Louis Park line (from France Ave.)		2.059
Robbinsdale line (from Xerxes Ave..)		1.846
Columbia Heights line (from 37th Ave.N.E.)		1.541

Minneapolis & StPaul Suburban Railroad
Local Suburban Division
Track Lineal Feet 1-1-1926

	Track	**Lineal**	**Feet**	Track
	Tangent & Curved	Special Work	Total	Miles Total
Robbinsdale line				
Oakdale & W. Broadway to W. Broadway & 44th Ave. N.	9397.3	348.4	9745.7	1.846
St. Louis Park line				
Lake St.: City Limits to Brownlow Ave.	10437.3	346.9	10784.2	2.042
Fern Siding		341.8	341.8	0.065
Total				2.107
South St.Paul line				
Concord St.: Annapolis St. to Linden St.	41424.9	656.2	42081.1	7.970
South St.Paul Sand Pit (40# rail)	187.6	414.0	601.6	0.114
Marie Ave. Wye (90.1 + 87.6)	177.7	373.6	551.3	0.104
Linden St. Wye	77.9	342.1	420.0	0.080
Carhouse	2189.0	948.6	3137.6	0.594
				8.862
Divison Total				12.815

Miles of Track
Minneapolis & St.Paul Suburban Railway 6-15-1899
Minneapolis & St.Paul Suburban Railroad 3-2-1910

Date 30-Jun		First Track	Second Track	Sidings	Total Track
1909	Owned	47.50	14.88	2.37	64.75
	Leased	8.82	1.28	0.06	2.43
	Operated	16.22	11.10		27.32
	Total	72.54	27.32	2.43	102.33
1910	Owned	53.65	17.87	2.28	73.80
	Leased	9.05	1.38	0.14	10.57
	Operated	7.78	5.59		13.37
	Total	70.48	24.84	2.42	97.74
1911	Owned	53.65	17.87	2.37	73.89
	Leased	9.05	1.38	0.14	10.57
	Operated	7.78	5.59		13.37
	Total	70.48	24.84	2.51	97.83
1912 and 1913	Owned	53.65	17.87	2.11	73.63
	Leased	9.05	1.38	0.14	10.57
	Operated	7.48	5.91		13.39
	Total	70.18	25.16	2.25	97.59
1914	Owned	54.93	17.28	4.11	76.32
	Leased	8.90	1.21	0.19	10.30
	Operated	7.48	5.91		13.39
	Total	71.31	24.40	4.30	100.01

		First	Second	Sidings	Carhouse	Total
1915	Total	52.57	13.00	3.23	0.14	68.94
1916	Total	52.57	13.21	3.23	0.14	69.15

Leased:

CM&StP RR	10 years from 10-19-1905	$1000 per year	7.38 track miles	Renewed
M&StL RR	40 years from 10-1-1907	$2000 per year	1.50 track miles *	

Operated under Agreement: detail first listed as of 6-30-1910:

Minneapolis St. Ry.	9/6/1905	St.Paul City Ry.	3/1/1905

* M&StL Ry Tonka Bay branch 6-30-1907:

Main Track	1.450 miles
Sidings	0.224 miles
Total Track	1.674 miles

5% Mortgage Bonds issued 9-1-1899, 25 years, due 9-1-1924.

Security	6/30/1909	6/30/1911	6/30/1914	
Track & Overhead	6/30/1910	6/30/1913	6/30/1916	
St. Paul to Stillwater	15.12	15.12	15.12	miles
Stillwater local lines	2.09	2.09	2.11	miles
White Bear line	4.40	4.40	4.44	miles
Mahtomedi line	1.69	1.69	1.69	miles
Sidings	2.37	0.62	0.62	miles
Total	25.67	23.92	23.98	miles

Overhead

Construction

OVERHEAD CONSTRUCTION

The first electric line in Minneapolis, on 4th Ave. S., used wood side poles with span wire construction. The first electric line in St.Paul, on Grand Ave., used side poles with span wire construction on the east half, and center poles with side brackets on the west half. Future construction in St.Paul generally used side poles with span wire construction because of the narrow streets.

Frank Trumbull's January 18, 1893, Inspection Report stated that Minneapolis used center poles with brackets, St.Paul side poles with span wire with two exceptions. Iron center poles with brackets (later replaced with side poles and span wire) were used on University Ave. from Grotto St. to the city limits, and on Grand Ave. from Snelling Ave. to Victoria St.

The TCRT Financial Booklet dated July 1, 1901, stated the following. "The overhead work is supported on iron poles. In Minneapolis, where the streets are wide, these poles are placed between the tracks, with the two trolley wires supported by neat and ornamental brackets. In St.Paul, where the streets are narrow, the poles are placed on the curb lines, and the trolley wire is supported by cross wires, although in certain streets the center pole and bracket is used where there is sufficient width."

The 1902 U.S. Census reported that of the 251 total miles, 130 miles were of span wire construction and 121 miles of center pole construction.

In Minneapolis, the center poles with side brackets were replaced with side poles and span wire beginning in 1899 and continuing through 1908. TCRT developed its own design of iron pole which was manufactured in its shops. A list of the streets which had center pole with side bracket construction is appended. The replacement program was undertaken in two stages: one during 1905, completed 1906, and the other in 1909, completed 1910.

The 1907 U.S. Census reported that the 363.87 miles of track comprised 312.30 miles of span wire construction, 47.87 miles of center pole construction, and 3.70 miles of side bracket construction.

During 1909 experimental work on concrete overhead poles was undertaken. A "concrete post factory" was established in Mineapolis on the Harriet right-of-way between Chowen Ave. and Drew Ave.. Several experiments were made, but they never attained widespread use. The only installation retained was in Minneapolis on W. 50th St. between Xerxes Ave. and Upton Ave.

During 1914 side poles replaced center bracket poles on the St.Louis Park line from Chowen Ave. to the curve off Minnetonka Boulevard.

The original trolley wire used was 2/0 grooved wire, also called "figure eight" wire. The Mpls. St. Ry. valuation of 1-1-1916 reported almost all 2/0 figure eight wire with a small amount of 1/0 round wire. The St.Paul City Ry. valuation of 1-1-1920 reported all 2/0 figure eight wire except for 1/0 round wire used at (1) Como Park spur, (2) Lake Phalen Park spur, and (3) Fair Grounds loops. TCRT became dissatisfied with this type of wire, and in 1922 began a yearly replacement program. 3/0 round wire was selected as the new standard. Twin City fittings (hangers and ears) were also replaced at the same time with Ohio Brass Co. fittings. By 1931 about 80% of the 527 miles of trolley wire ahd been replaced, so that only 100 miles of the old wire remained.

TCRT-manufactured iron overhead poles were fairly standardized. Three-section poles predominated, with three sizes produced: 4"-5"-6", 5"-6"-7" and 6"-7"-8". Some four-section poles were produced, all 4"-5"-6"-7". Lengths of the three-section poles were 23', 27', 28', 30' and 32', while the four-section poles were all 30'. Most of the urban lines used the company-designed cast iron poles. Wood poles were used on the suburban lines and some portions of certain urban lines. The ornamental iron center poles with side brackets remained only on the right-of-way in Minnehaha Park, Minneapolis.

As of 1944 the inventory of overhead side poles consisted of 14,350 iron poles and 4,665 wood poles, for a total of 19,015 poles. All 445 miles of track used 3/0 round trolley wire.

►In Minneapolis and St. Paul, the Twin City Rapid Transit Company uses span-wire construction on practically all its 364 miles of city and suburban lines. The trolley wire is No. 000, supported by single anchors, and the span wire is 3-strand No. 11. The poles are spaced 100 to 110 feet apart, and the butts are treated with creosote for 3 feet of their length at the ground line. The insulation consists of a piece of maple, 12 inches long and square in section, which, before mounting, is thoroughly boiled in paraffin. It carries two bronze hanger castings and a malleable-iron sister hook. The hanger castings are designed for a driving fit over the ends of the maple insulating stick, and are secured by split cotter pins; the sister hook which slips over the wooden piece is held near the middle on either side by a cotter pin inserted through $\frac{1}{4}$-inch holes in the stick. As thus assembled the hanger has a total depth of $7\frac{3}{8}$ inches, affording two ears $11\frac{1}{2}$ inches between centers for attaching to the trolley wire. The hanger is comparatively light, is a good insulator, and is readily renewable.

1907 US CENSUS (12-31-1907)

SRJ
Sep 1891
Track & Overhead

With slight exceptions the center pole construction is used throughout, iron poles being employed in the business streets and interurban line, and octagonal wooden poles in the suburban and outlying districts.

In all nearly 225 miles of double track is in daily operation, of which 125 is in the corporate limits of Minneapolis and 100 in St. Paul

TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS AND ST. PAUL SRJ 8-29-1903

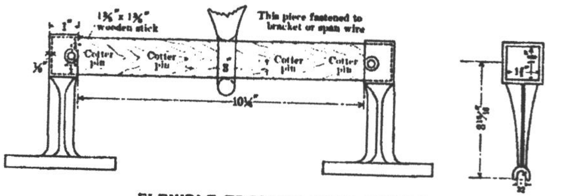
The Twin City Rapid Transit Company uses figure-8 wire, equivalent to No. 00 round wire. The span wire used consists of three strands of No. 11 galvanized iron wire. The largest overhead feeders are 500,000-circ. mil, copper-insulated, with triple braid. Underground conduits are McRoy multiple duct vitrified clay. The company uses a peculiar form of trolley wire hanger of its own manufacture, in which insulation is secured by a stick of wood which is supported in the middle from the bracket or span wire, and on each end of which the trolley wire clips are supported. This was described in the STREET RAILWAY JOURNAL of April 5, 1902. The company has a very heavy direct-current feeding system, and aims to maintain the maximum drop of voltage on its lines to

◆◆◆

SRJ APR1902

Trolley Wire Hangers Used at Minneapolis

A peculiar form of trolley wire hangers has been used by the Twin City Rapid Transit Company, of St. Paul and Minneapolis, for a number of years, a sketch of which is shown herewith. This hanger was designed in the first place to avoid the excessive breakage common with the old-fashioned rigid hangers used on bracket construction. The hammering of a trolley wheel against a trolley wire insulator rigidly fastened to the bracket of the center pole caused much trouble from breakages in the earlier days on this road as it has on all others. As seen from the sketch, the present hanger consists of two clips mounted on the ends of a wooden stick $1\frac{3}{8}$ ins. square. The stick serves as the insulator. The clip castings are driven on to the ends of this stick and a split pin put through to keep the casting from slipping off. The stick is suspended from the bracket or span wire, as the case may be, by a square link which fits so loosely over the stick that it can move back and forth through the link. This movement, however, is limited to 3 ins. by split pins located as shown. This movement allows the strain on the trolley wire to equalize itself, which is a very valuable feature in preventing the breaking and tipping of insulators. As the blow of the trolley wire comes on the end of the insulated stick, which is 5 ins. from the actual point of suspension at the bracket, there is not as rigid a blow as with the old-fashioned hanger, because one end of the hanger can tip up slightly to cushion the blow. The wood is also likely to be less brittle than the insulating compound used in the ordinary hanger. This hanger gave such good satisfaction on bracket center-pole construction, of which there is a great deal, that it is now used on both span and bracket work.



FLEXIBLE TROLLEY WIRE HANGER

K&M Division POLY-VU
Torrance, Calif. 90503

CENTER POLES WITH BRACKETS
REPLACED 1899-1908

On	From	To	Quantity Superseded Poles	Quantity Superseded Brackets
Washington Ave. N.	Hennepin Ave.	42nd Ave. N.	41	79
Plymouth Ave. N.	Washington Ave. N.	Penn Ave. N.	14	37
6th Ave. N.	5th St. & Hennepin Ave.	Russell Ave. N.	63	-
Emerson Ave. N.	20th Ave. N.	32nd Ave. N.	14	-
20th Ave. N. and Penn Ave. N.	Washington Ave. N.	32nd Ave. N.	9	51
Hawthorne, Bryant and Laurel	Hennepin Ave.	Oliver Ave.	18	8
Western Ave. N.	Hennepin Ave.	Penn Ave. N.	47	-
Monroe St., Broadway and Washington St.	Central Ave. N.E.	17 Ave. N.E.	-	45
Douglas Ave.	Hennepin Ave.	Knox Ave.	24	1
Hennepin, 31st St. and Harriet R/W	Mississippi River	Lake Harriet loop	86	11
Cedar Ave.	Riverside Ave.	34th Ave. S.	18	57
1st Ave. S., Grant St. and Nicollet Ave.	Washington Ave. S.	38th St.	69	31
Nicollet Ave.	38th St.	50th St.	21	39
3rd St. and 4th Ave. S.	Hennepin Ave.	38th St.	20	-
Lyndale Ave. S.	Hennepin Ave.	31st St.	60	-
Bryant Ave. S.	31st St.	46th St.	4	67
6th St., 8th Ave. S. and Chicago Ave. S.	Hennepin Ave.	38th St.	129	-
4th St., 8th Ave. S., 6th St., 10th Ave. S., 15th Ave. S., Franklin Ave., and Bloomington Ave.	Marquette Ave.	32nd St.	23	94
Washington Ave. S., Riverside Ave. S., 27th Ave. S., and Minnehaha Ave. S.	Hennepin Ave.	Minnehaha Falls	55	148
2nd St. N.E. and 25th Ave. N.E.	Central Ave. S.E.	Grand St. N.E.	1	78
Central Ave. S.E.	Mississippi River	40th Ave. N.E.	61	66
University Ave.	Washington Ave. S.	City Limits	25	1
4th St. S.E., 15th Ave. S.E., and Como Ave. S.E.	Central Ave. S.E.	City Limits	5	58
Feeder lines			1	38

3"-4"-5" poles 25'6" and 28'0" long; 4"-5"-6" poles 28'0" long.

St. Paul

University Ave.	Grotto St.	City Limits	3.89 miles
Grand Ave.	Snelling Ave.	Victoria St.	1.46 miles

12-31-1901 1902 US Census
Miles of 1st Track
with Center Poles 60.50

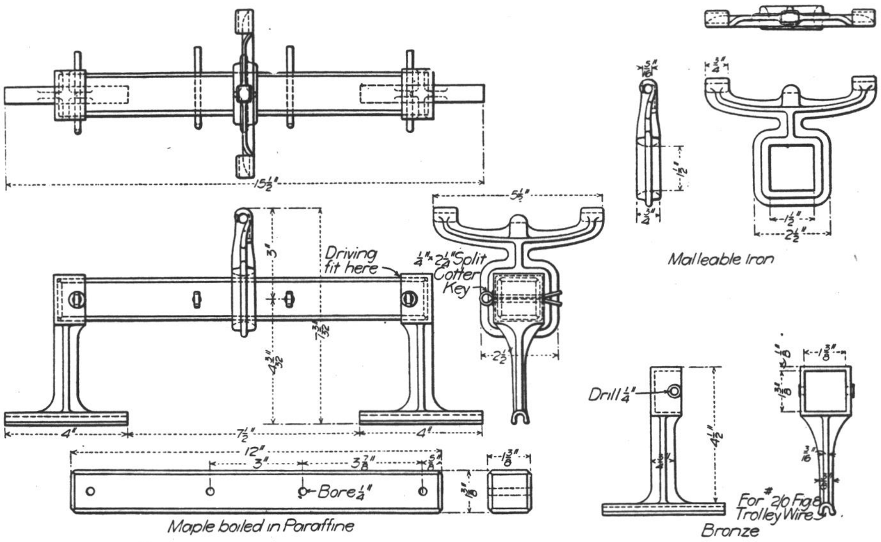
12-31-1907 1907 US Census
Miles of 1st Track
with Center Poles 24.19

Decrease (36.31)

ERJ 10-10-1908

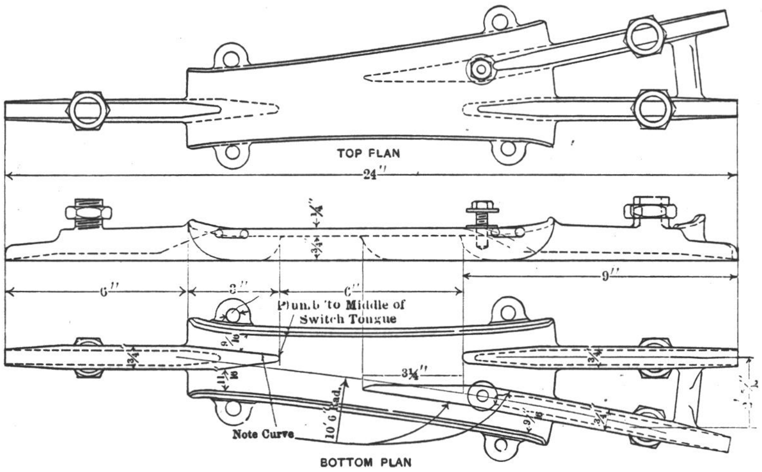
MINNEAPOLIS, MINN.

The Twin City Rapid Transit Company, of Minneapolis and St. Paul, uses span wire construction on all of its 354 miles of city and suburban lines. The trolley wire is 00 figure 8 and the span wire is 3-strand No. 11. Poles are spaced from 100 to 110 ft. apart, and the butts are treated with creosote for 3 ft. of their length at the ground line. Lightning arresters are put in only at junctions with underground feeder cables.



Twin City Rapid Transit Company—Standard Trolley Hanger

The trolley wire on the Twin City lines is supported by hangers of a simple design, which are shown in the accompanying illustration. The insulation comprises a piece of maple 12 in. long and square in section. Before mounting, this wood is thoroughly boiled in paraffin. On the piece of wood are mounted two bronze hanger castings and a malleable-iron sister hook. The hanger castings are designed for a driving fit over the ends of the maple insulating stick. When so placed the castings are secured by split cotter pins. The sister hook, which slips over the wooden piece, is held near the middle by inserting two cotter pins, one on either side, through 1/4-in. holes in the stick.



Twin City Rapid Transit Company—Standard Trolley Frog

As assembled, this hanger has a total depth of 7 3/32 in. and provides two ears 11 1/2 in. between centers for attaching to the trolley wire. The hanger is comparatively light, is a good insulator and may be assembled or have the damaged parts replaced with simple hand tools.

An overhead trolley frog designed for an angle of 12 1/2 deg. is also illustrated. The engineers of the Twin City Rapid Transit Company, in designing this trolley frog, have given especial attention to the arrangement of the three points under the pan. It will be noted that the point from which the turnout wire leads has been made longer than usual. This point also is so shaped that under normal conditions the trolley wheel must take the proper lead.

The maintenance of overhead lines is in charge of a line superintendent, who has two foremen for the city lines in Minneapolis and St. Paul and two foremen for the Minnetonka and Stillwater interurban lines. The day emergency crews in Minneapolis and St. Paul are kept on regular maintenance work, but are in touch with headquarters by telephone at frequent intervals and can usually be reached promptly for emergency calls, which do not average over four or five a day. One night emergency crew, consisting of two men, responds to all calls in both cities, using a tower car. This crew remains at its station until midnight, and then, unless required for emergency service, goes out on regular maintenance work for the remaining six hours of the night.

The emergency tower wagons and cars of a number of other city systems are shown in the accompanying illustrations.

serve to keep the controller from moving and still not hold it rigidly on the floor. This mounting will permit the controller when fastened to the dash in the usual manner to pivot about the feet in case the dash is bent over without danger of damaging the frame.

The controller cover is another part that should be kept in such condition that it can be quickly and easily opened. As motor cutout switches in most cases are located inside the controller, if it is necessary to cut out a motor on the road the motorman must open the cover, and this in most cases without the use of any tools. Special attention must then be given to covers and to the cover clamping screws and nuts. Covers must set properly in place and be securely fastened. The clamping screws must be straight, threads in good condition and not burred, and the nuts must turn on and off by hand.

The most satisfactory location for the cutout switches is near the motor, one near each, and within easy access from the side of the car instead of inside the controllers. This arrangement permits the motorman to be sure as to which motor he is cutting out, for he can throw the switch near the particular motor which is giving trouble. This method has been in use on one road for nearly ten years and has proved entirely satisfactory.

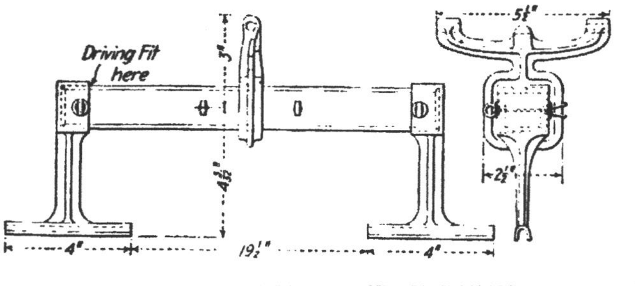
With the cutout switches located inside the controller it is necessary to throw them in the controllers at both ends of the car to properly cut out a motor. The usual procedure is to cut out a motor and then try the car. If the circuit breaker does not blow it is assumed that the proper motor has been cut out. It often happens, however, that the motorman operates with the defective motor in circuit and cuts out the good one.

Overhead Construction on the Twin City Lines

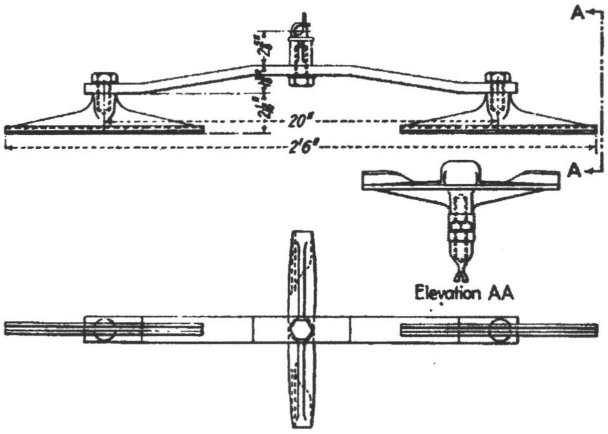
BY J. C. VINCENT
Assistant Engineer Twin City Rapid Transit Company, Minneapolis, Minn.

As is well known, the operating companies composing the Twin City Lines were pioneers in street railway electrification, having started in 1889. Because of this fact and also because the Twin City Lines have extensive shops, the overhead construction in use has been developed along original lines and was manufactured in the railway shops.

The construction in general consists of steel side poles with span wires supporting the trolley wires. In this construction the main idea has been to keep it as light as possible, and at the same time to eliminate hard spots. As the life of trolley wire is determined by the wear at the hangers and special work, the overhead construction has been designed for light and smooth underrunning so as to eliminate pounding on the wire. This article will be devoted to descriptions of the trolley hanger, the sub-feed hanger, the pull-over, the pole top, and a crimping tool used in attaching the hangers to the Fig. 8 wire.



TWIN CITY OVERHEAD—STANDARD HANGER



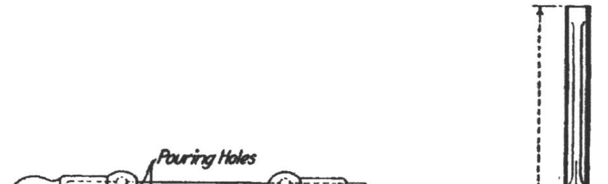
TWIN CITY OVERHEAD—SUB-FEED HANGER

As shown in an accompanying illustration, the trolley hanger consists of two legs attached to the ends of a 2-ft. maple stick, at the center of which there is a sister hook for span-wire attachment. The legs are of bronze, with a 4-in. ear on the bottom of each and a square fitting on the top with provision for pinning to the maple stick by means of a cotter pin.

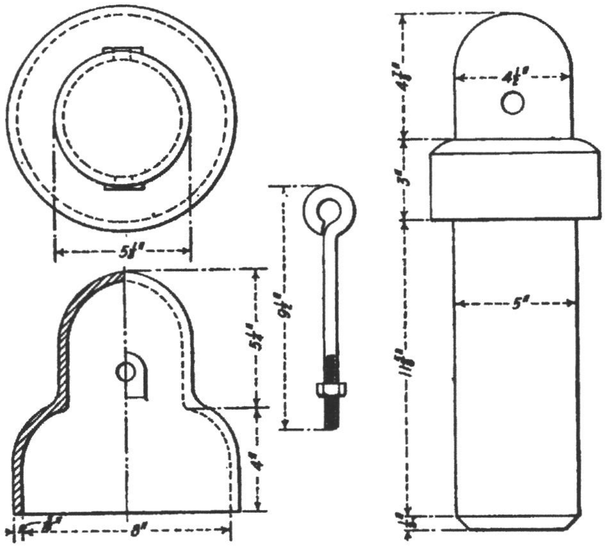
The maple stick is 24 in. long, 1⅜ in. square, with the corners chamfered, and it is thoroughly impregnated with paraffin by boiling. Formerly a somewhat shorter stick was used but it has been found that the use of the longer stick results in more uniform wear, that under the leg being now not noticeably greater than in the middle of the span. The sister hook is of malleable iron, with the top arranged for hooking over the span wire and with a square eye below through which the maple stick slips loosely. The hook is held near the center of the stick by means of two cotter pins.

This construction is light and, as the points of support are not directly below the span wire, the trolley wire rocks slightly as the wheel passes under the hanger and no pounding results.

The sub-feed hanger is similar in general principle to the hanger just described, as far as the provision of flexibility is concerned. It consists of two ears of the usual design carried at the end of a light channel iron with center raised about 1⅜ in. above the ends. At the center this channel iron is bolted to a galvanized mal-



TWIN CITY OVERHEAD—PULLOVER WITH WOOD STRAIN INSULATOR



TWIN CITY OVERHEAD—STANDARD POLE PLUG AND CAP

leable iron hanger for attachment to the span wire. This arrangement gives the desired flexibility and also doubles the current-carrying capacity.

The pull-over consists of a clamp, a gooseneck, and a wood-strain insulator. The wood-strain insulator is used here, as elsewhere in the system, because the composition insulator does not give satisfaction on account of lightning puncturing the insulating material. The clamp is of bronze, and is made with a 10-in. ear. The gooseneck is of ⅝-in. wrought-iron rod bent to the form shown in one of the illustrations, and threaded on both ends.

The wood-strain insulator consists of a cylindrical piece of hard maple, 6¾ in. long and 1⅛ in. in diameter, thoroughly impregnated with paraffin. Near each end is a semicircular groove. On each end of the metal rod is a malleable-iron casting provided with eye, hook or nut, as required. The clamps are fastened to the rod by means of babbitt metal poured into the groove in the rod and into a corresponding groove in the casting. With this design of pull-over there is no heavy weight directly over the wire.

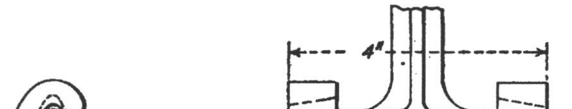
All other special work, such as switches and crosses, is made straight underrunning, of tough bronze, and of as light weight as possible.

The trolley wire adopted as standard by the company is No. 00 hard-drawn copper. This wire allows a firm fastening to the hangers and pull-overs, is easily installed, and is of a size sufficient to carry the current, as it is supplemented by feeders, mostly underground, where necessary. The type of hanger used does not allow the wire to lie flat and it overcomes the objection usually made to Fig. 8 wire. The wire used at present is given an extra pass through the dies, thus furnishing greater tensile strength and hardness and consequently yielding greater life. The choice of No. 00 Fig. 8 trolley wire was determined by our experience with this size and the No. 000 wire.

The span wire used is made up of three strands of No. 11 galvanized steel wire, the light weight supported and the large sags allowed in the span wire, 3 ft. to 4 ft. safely permitting the use of this size of wire. The large sag in the span wire conduces to the flexibility of the construction in both the vertical and horizontal directions.

We use a side pole made of 7-in., 6-in. and 5-in. standard pipe, with 8-in. standard pipe for the ground sleeves. In the top of the pole a pine plug 20 in. long is inserted, this having the form shown in one of the illustrations. Over the plug is placed a cast-iron cap and the span wire is attached to a wrought eye-bolt which passes through cap and plug.

The company has developed a crimping tool for use in attaching the trolley wire to the hangers, and this has given very good satisfaction. The details are shown herewith. The device consists of a double hook which is designed to force the trolley wire firmly into the groove in the ears, the swaging being done with a block and hammer. It is drawn down by means of cam and lever which forces a long anvil against the lower surface of the trolley wire. The anvil is attached to the remainder of the device by means of a chain so that the whole may be kept together.



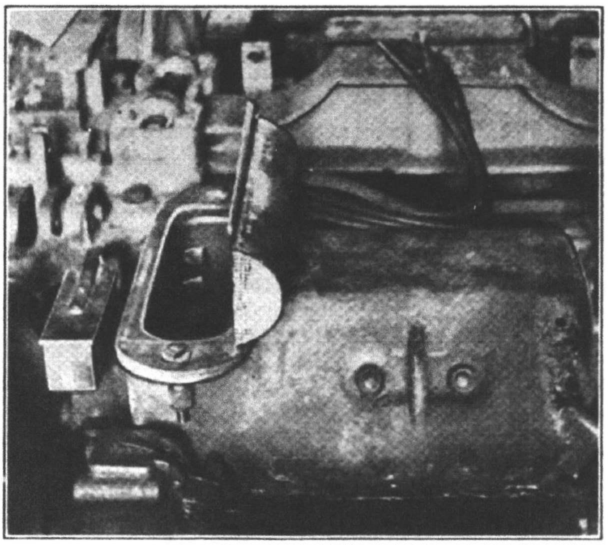
TWIN CITY OVERHEAD—TROLLEY CAR CRIMPING TOOL

Semi-Ventilation of GE-57 Motors

BY R. W. PALMER

Manager Cleveland & Erie Railway, Girard, Pa.

In order to increase the service capacity of the GE-57 railway motors and reduce the temperature of the windings, the Cleveland & Erie Railway has replaced the solid iron covers over the commutators of motors of this type with wood covers having their centers cut out. The open spaces have galvanized-iron covers or hoods, as shown in the accompanying illustrations. Inasmuch

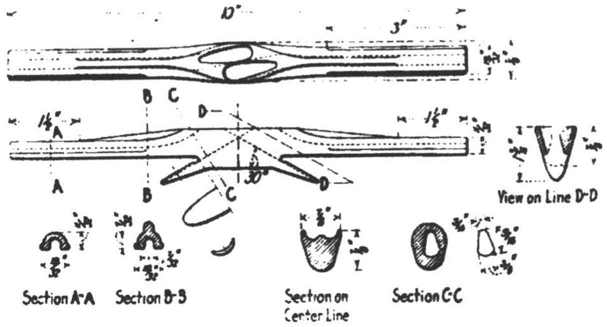


HINGED VENTILATED COVER OVER COMMUTATOR OPENING

ERJ 10-30-1915

A Balanced Trolley-Wire Splicer

Stability, light weight and reduced cost have been obtained by substituting an improved trolley-wire splicer for those formerly used by the overhead lines maintenance department of the Twin City Rapid Transit Company, Minneapolis, Minn. Increased stability was obtained, or the tendency of the splicer to overturn when in the line was overcome in the new splicer by minimizing the vertical depth which, as shown in the accompanying illustration, is only ⅞ in. The length of the splicer was reduced to 10 in. by placing the openings through which the wires pass side by side transversely with the long dimension of the splicer. This also permits the trolley wire to be twisted after it is passed through the splicer, thereby the strain is taken by the wires directly rather than through the clamping action of the splicer. A smooth under-running surface is obtained by lips that are bent in to fill the space formed by the bends in the wires where they enter the splicer. The reduction in vertical height as well as length decreased the weight of the splicer, and at the same time reduced the cost.



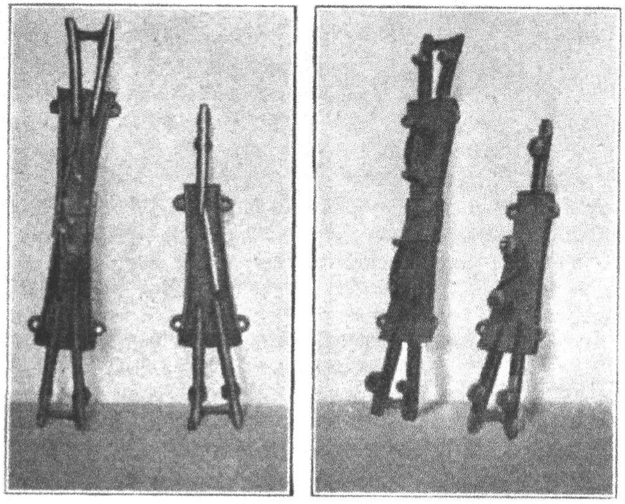
TWIN CITY TROLLEY-WIRE SPLICER

9-20-1919

Spring Switches and Crossovers Made From Standard Trolley Frogs

Twin City Rapid Transit Company Makes This Equipment for Special Locations and the Service Obtained Is Most Satisfactory

IT IS OFTEN the case that at crossings where the angle at which two lines cross is very small difficulty is experienced because the trolley wheel follows the wrong wire. This trouble also occurs in backing up at a wye. To overcome such difficulties at these two locations the Twin City Rapid Transit Company, Minneapolis, has developed a trolley frog spring switch and spring crossover, both of which have proved most successful during the past two years.



TOP AND UNDER SIDE VIEWS OF SPRING SWITCH AND SPRING CROSSOVER MADE FROM STANDARD TROLLEY FROGS

The spring switch is made from the company's standard switch by first cutting off about 3 in. of the lead to the curve. A hole is then drilled through each boss on the top of the casting, and in the hole nearest the single end a split post is set. The switch tongue is inserted through the other hole. The switch tongue consists of a piece of malleable iron bent at right angles, the tongue side slightly flattened and brought to a biased point, the post side remaining round and being split. A piece of spring steel is then fastened to the two posts in such a manner as to hold the tongue against the single line lead. This is clearly shown in the accompanying illustrations and drawing.

Suppose this switch in operation. A car desiring to wye and turn back will spring the switch when it enters on the tangent line from the double end. It then backs into the curve over the spring tongue which offers a continuous line.

The crossover is similarly made from two standard switches cut off at the single end just back of the pull-off rings and fastened together by a plate riveted over the joint. In this case the springs are so arranged as to keep the tongue points against the side of the switch. This cross-over would be used on a double track line or in any location where cars on a given track always operate in the same direction. As before, assuming this crossover to be in service, a wheel would enter over the spring tongue and be compelled by the second spring tongue, acting as a guard, to leave over the proper line.

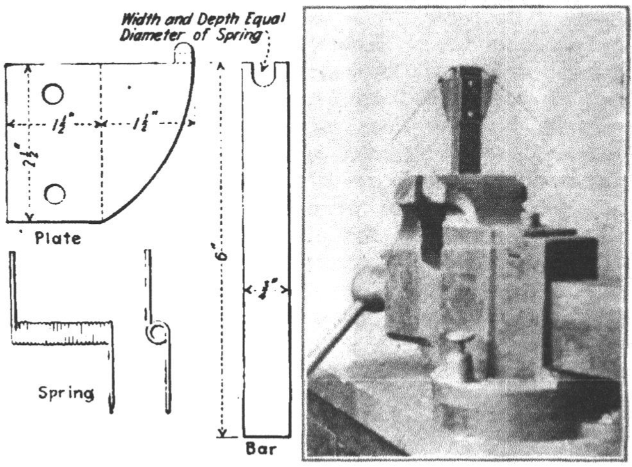
The company now has in service about fifty spring switches and two spring crossovers. These have always worked satisfactorily and no additional wear to the trolley wheel has been noticed. Malleable iron is now being used in the manufacture of all switches and is giving about double the life of bronze.

Handy Adjuster for Gear-Case Cover Springs

THE accompanying illustrations show a small device which has been constructed in the shops of the Des Moines City Railway to simplify the work of installing springs on the gear-case covers of G.E. 57 and G. E. 67 motors. The usual method of using a screwdriver to twist this spring and the hand to hold it in position is often very trying to the workman, and sometimes results in bruises to the hand, as it is frequently necessary to install the springs under the car where the space is limited and where the position that must be assumed by the workman is very awkward.

The device shown herewith for installing these springs consists of a piece of iron 6 in. long by 1½ in. wide and ¾ in. thick with two pieces of sheet iron attached. The iron bar grooved out on one end to accommodate the spring and the pieces of sheet iron are fastened to this bar about ½ in. from the end as indicated in the accompanying illustration. After assembling, these sheet-iron pieces are bent back at right angles and the finger at the end is doubled over to provide lips for holding the end of the spring.

To install a new spring on a gear-case cover the spring is laid in the grooved end of the tool. One end of the spring is then hooked under one of the side fingers and the spring is wound up two turns to provide tension. The other end of the spring is then hooked under the opposite finger. The tool holds the spring so that it can be readily placed in the hinge and the hinge pin inserted without any trouble and without danger to the workman. After installation the ends of the spring are released and the job is completed.



DEVICE FOR QUICKLY AND EASILY INSERTING HINGE SPRING OF GEAR-CASE COVERS

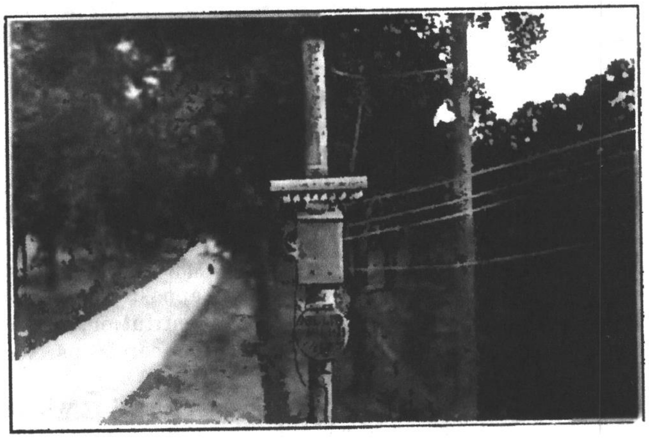
The United States Bureau of Mines will dedicate its new experiment station in Pittsburgh, Pa., on Sept. 29 and 30, and Oct. 1. The buildings are located at 4800 Forbes Street. Mine and coal-dust explosions will form part of the program.

Digitized by Google

Signal Maintenance and Overhead Kinks

A Description of Double-Track Crossing Signals and Other Overhead Equipment Developed on the Minneapolis Street Railway in an Effort to Reduce Maintenance Work

THE MINNEAPOLIS SIGNAL CONTACTOR IN SERVICE



SIGNAL LIGHT, RELAYS AND BELL MOUNTED ON POLE AT CROSSING

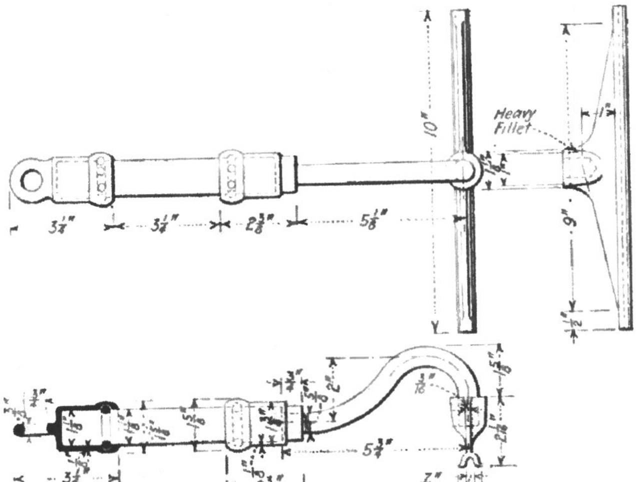
ON THE lines of the Twin City Rapid Transit Company, Minneapolis, Minn., several pieces of equipment have been developed recently by the overhead department. These include such apparatus as double-track crossing signals, special pull-off goose-neck and strain insulators, electrically-lighted switch lamps, etc. The maintenance of signals on this property is taken care of by the same crew which looks after all of the overhead maintenance, including telephone lines. A description of the equipment with which this maintenance work is accomplished appeared in an article in the July 19, 1919, issue of the ELECTRIC RAILWAY JOURNAL, page 121.

The drawings on page 578 show the construction details of a double-track crossing signal, relays and box, used on the suburban lines of the Minneapolis company. The object of the double equipment is that cars passing in one direction will not check the operation of the lights and bell for cars going in the opposite direction at the same time. A second drawing shows the details of construction of the trolley contactor used in connection with this crossing signal.

In operation the trolley wheel of the car makes a contact with the cut-in hanger placed approximately 1,300 ft. from the crossing. This contact lights the bank of lamps over the signal relay box, and the current for the lights energizes the coil which closes the trolley circuit contact to keep the lights burning and also closes the battery contact which keeps the bell ringing until the car reaches the crossing. At the same time the station is also illuminated, showing passengers waiting for the car and warning passengers of the approaching car. At the crossing the wheel makes a second contact with the trolley contactor and this acts as a short on the relay coil allowing the armature for the trolley contact and the battery current to be released. This causes the bell to cease ringing and extinguishes the lights. The locations of the bank of lamps, the relay box and the signal bell are shown in an accompanying photograph.

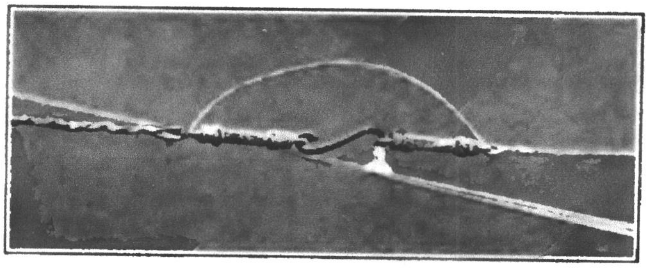
The relay boxes are constructed of ¾-in. pine lumber and receive two coats of light olive paint. The bell is a 10-in. gong, furnished by the Union Railway Signal Company. The contactor is made of cold rolled spring steel and the trolley ear suspension bar is made of ash saturated with hot linseed oil and painted with two coats of black insulator paint.

Another device shown in an accompanying drawing and a photograph is a goose-neck and strain insulator that is being used at the present time. One illustration shows the standard pull-over that has been in use for a number of years and another the strain insulator and goose-neck now being used. It will be noted that the old goose-neck is threaded at both ends and the wood strain insulator has an eye on one end and the other is tapped to allow the goose-neck to be screwed into it.



CONSTRUCTION DETAILS OF STANDARD PULL-OVER

The wood strain insulator is used to cut into the span wire next to the trolley. The one with the eye in both ends is used for regular installation, and that showing the eye in one end and the hook in the other end is used to replace one which may be broken for any cause. The



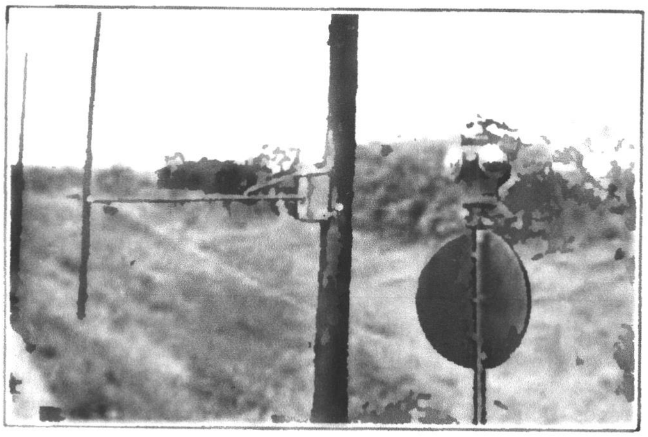
PULL-OFF GOOSE-NECK IN SERVICE

eye in the strain insulator is shown with the goose-neck threaded through it, so that the span wire can be hooked into the end of the insulator without the necessity of undoing the ends of the span wire. A photograph shows the new goose-neck with the two insulators attached to it and with the safety jumper over the top, so that in case either of the insulators is broken the span wire will not hang down from the trolley on the opposite track or from the pole. In the same way of substitution, one of these insulators with the hook on one end can be used as in the case previously described.

The advantage of the new goose-neck is that it will be necessary to carry in stock only the wood strain insulator with the eye in each end and the one with the eye in one end and the hook in the other. This will permit doing away with the insulator which has the eye in one end and the other end blank and tapped to allow the old goose-neck to be screwed into it as shown in the illustration.

An accompanying photograph shows an electrically-lighted switch lamp. A short distance away from the switch lamp is a box attached to a pole with a long arm reaching out from the pole toward the track. This arm is to enable the motorman to turn the switchlight on and off without leaving the cab of his car. The lamps are in series with other lamps on the pole, thus making up the necessary number for a series-burning circuit. At some of these switch locations, part of the extra lamps have been installed in the telephone booths at various places along th line where the motorman stops to get his orders from the dispatcher. Thus at night he is furnished with light to see that he makes proper notation of the dispatcher's orders.

In the box on the pole is a 3-amp. switch. The extension arm is ordinary ½-in. pipe of the desired length, fastened to the box by a floor plate and with a bracket as an additional support. Inside the pipe is a rod connected to the button on the switch and with a handle on the outer end with which to turn the switch on and off. There is no indicator to show the position of the switch as it is a simple matter, if the lamps do not light, to give the handle an additional turn. The lamp on the switch stand is one of the old pattern of oil switchstand lamps with the tank and burner removed and a wall socket attached to the inside of the cover. Thus the incandescent bulb hangs in a vertical position and by opening the cover of the lamp, the bulb is conveniently inspected.



OIL TYPE OF SWITCH LAMP WIRED FOR ELECTRICITY

Electrification Considered in Chicago

At a joint meeting of the Chicago sections of the A.I.E.E. and A.S.M.E. and the electrical and mechanical sections of the Western Society of Engineers, held at the Western Railway Club on March 4, S. T. Dodd, General Electric Company, Schenectady, presented an illustrated talk giving "some comments on the present status of steam railroad electrification." In pointing out the extent to which trunk line electrification has advanced to date, Mr. Dodd stated that 1,239.59 miles of route and 2,706.45 miles of track in the United States are now electrified. There are 364 electric locomotives and 1,020 motor cars in use on these roads.

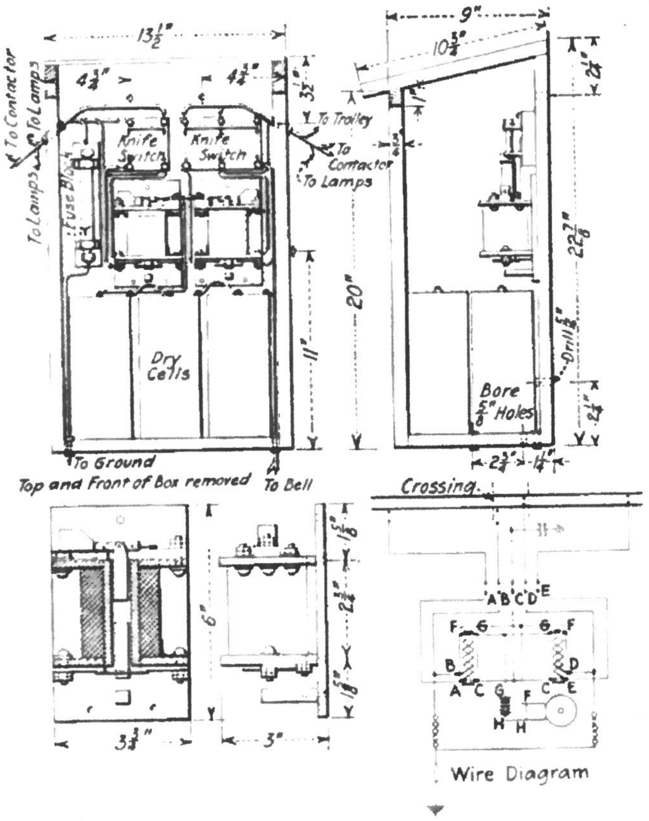
The theme of the paper was the tremendous saving in coal that could be realized through a complete electrification of the steam roads, this tending to show the economic necessity of early electrification. The speaker gave figures to show that practically 15 per cent of the total ton-miles of steam road operation is of a non-revenue character, a waste which could be eliminated through electrification. The immense consumption of coal by the railroads was emphasized by pointing out that 24 per cent of the total coal production of the United States and 5.8 per cent of the total oil marketed in the United States in 1918 were consumed by the steam locomotives. The total saving in coal which could be brought about through the elimination of the non-revenue ton-mileage under steam-road operation, and the more efficient burning of the coal in large generating plants as compared to the inefficient burning in steam locomotives, would be 122,500,000 tons per year.

N. F. P. A. to Hold Public Hearing

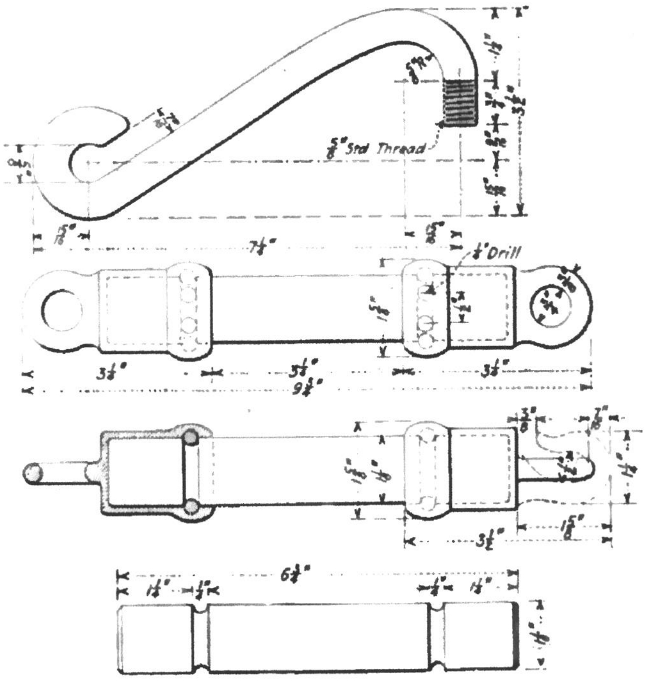
THE electrical committee of the National Fire Protection Association, on which the American Electric Railway Association is represented by Martin Schreiber, will hold a public hearing and committee meeting in New York City on March 23 and 24, at which the revision of the rules regarding carhouse wiring will be considered. The standing committee on cars and railways, consisting of Mr. Schreiber, R. C. Bird and Ralph Sweetland, will recommend the revised rules for carhouse wiring, which were approved by the Engineering Association at the Atlantic City convention.

The committee will report that the subject of carhouse wiring was given consideration because Rule 41 of the "Code" had become out of date, but that it was the desire of the committee to preserve as far as possible the intent of the old N. E. C. rules, but to put them in a form that would meet the wishes of the various parties interested. As the new section 41 was printed by the Engineering Association and distributed in advance of the Atlantic City convention, it will not be necessary to reprint it here.

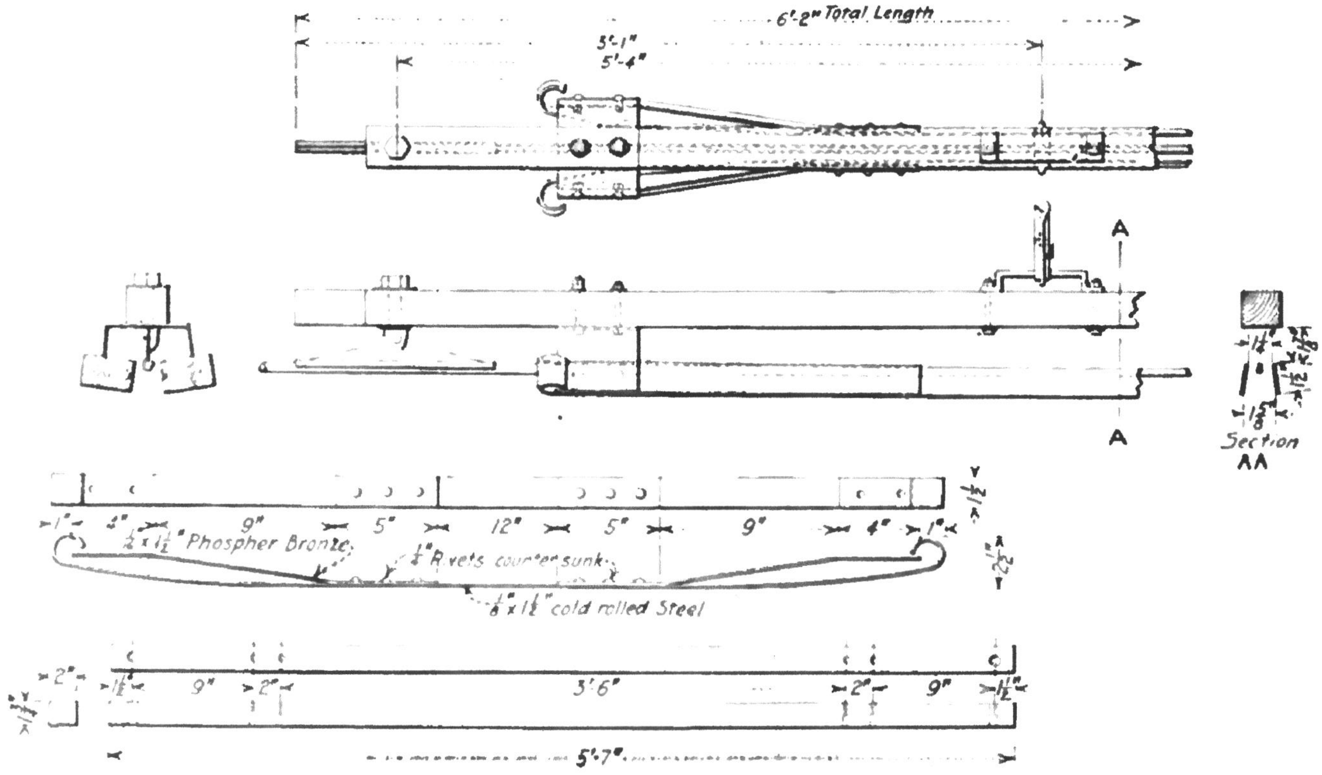
Detail Drawings Illustrating Signal Maintenance and Overhead Kinks


13½"
4¾"
4¾"
To Contactor
To Lamps
To Lamps
Fuse Block
Knife Switch
Knife Switch
To Trolley
To Contactor
To Lamps
Dry Cells
To Ground
Top and Front of Box removed
To Bell
9"
10¾"
22⅞"
20"
11"
Drill ⅝"
Bore ⅝" Holes
2¾"
1¼"
Crossing.
A B C D E
F G G F
B D
A C G F C E
H H
3¾"
3"
6"
Wire Diagram

CONSTRUCTION DETAILS OF DOUBLE TRACK CROSSING SIGNAL RELAYS AND BOX


⅝" Std Thread
¼" Drill
7½"
3½"
3½"
3½"
9½"
3½"
6½"
1¼"
1¼"

CONSTRUCTION DETAILS OF STRAIN INSULATOR AND NEW GOOSE-NECK


6'-2" Total Length
5'-1"
5'-4"
A
A
Section AA
1"
4"
9"
5"
12"
5"
9"
4"
1"
¼"x1½" Phospher Bronze
¼" Rivets counter sunk
⅛"x1½" cold rolled Steel
2"
1½"
9"
2"
3'6"
2"
9"
1½"
5'7"

DETAILS OF CONSTRUCTION OF CROSSING SIGNAL CONTACTOR

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

TCRT

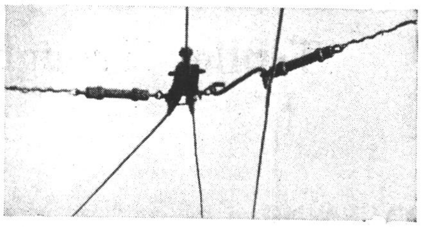
Straight Trolley Wire for Through Cars Prevents Dewirements*

BY JOHN L. SPENCER
Foreman Duluth Station
Twin City Lines, St. Paul, Minn.

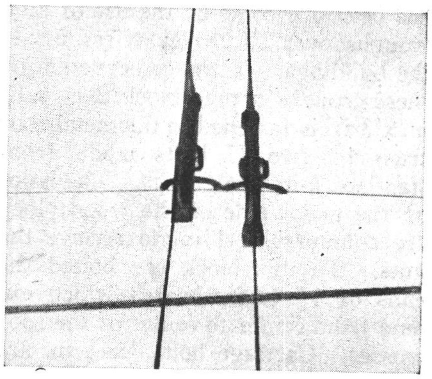
DAMAGED overhead with wire often torn down resulted from frequent dewirements at the car yards of the Duluth Avenue station, Twin City Lines, St. Paul, Minn., until a second straight wire was installed. Now main-line suburban and local cars use the straight wire without frogs, and cars entering or leaving the yards use the other one. There are 32 tracks and fourteen overhead frogs at this point. Trolley wheels of cars pulling out of the yard and carhouse do not touch the main-line wire until they leave the last track at the end of the yard. At that point a going out switch is installed for satisfactory operation.

The additional straight trolley wire is supported to the wire with the frogs at each frog by an 8-in. insulated gooseneck. This holds the two wires 8 in. apart all along the distance of 400 ft. The main-line straight wire is also supported by span wires which lead to iron side poles on the street. The wire with the frogs is supported by span wires leading to the iron poles in the yard.

Regular wooden hangers are used on both wires. These are the same as are used on all lines of the company. This type of construction has now been in use for over a year, and trouble from dewirements has been entirely overcome.



The main-line straight wire is supported at each frog of the second wire by an 8-in. insulated gooseneck

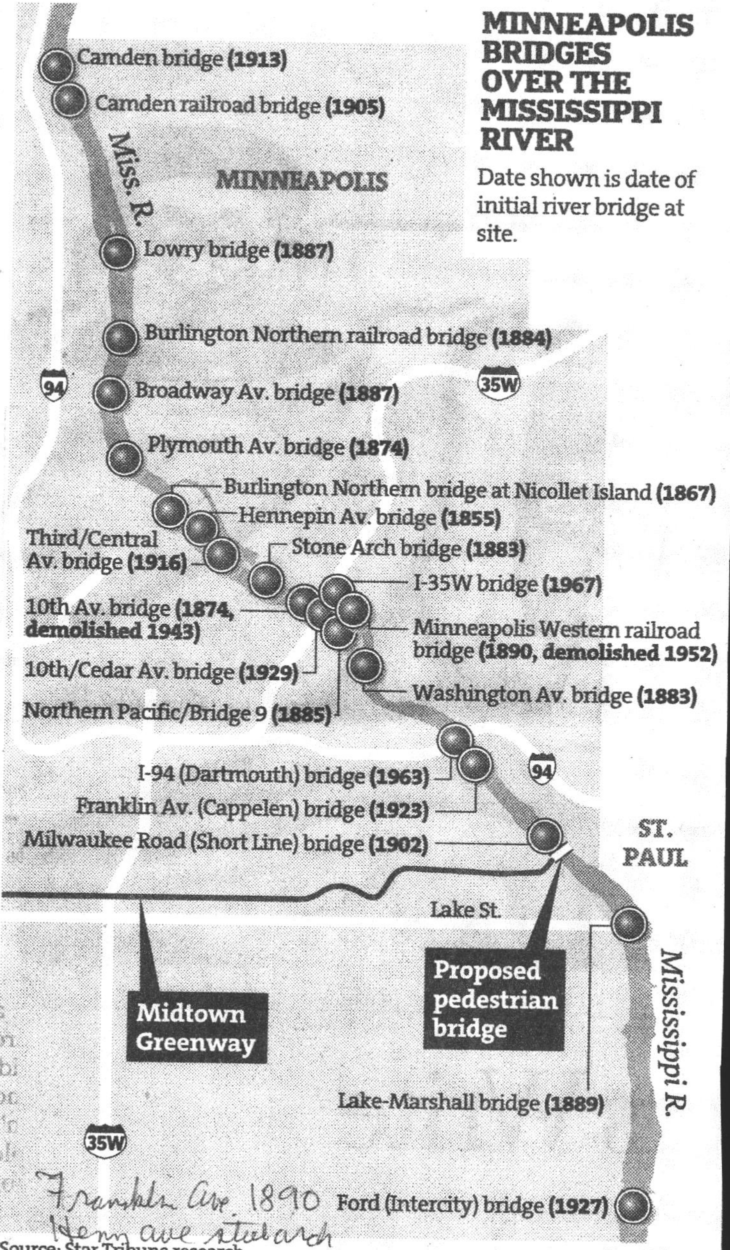


Standard wooden hangers supported from span wires are used on both wires

Contents of the
Back Pocket

MINNEAPOLIS BRIDGES OVER THE MISSISSIPPI RIVER

Date shown is date of initial river bridge at site.


Camden bridge (1913)
Camden railroad bridge (1905)
Miss. R.
MINNEAPOLIS
Lowry bridge (1887)
Burlington Northern railroad bridge (1884)
94
35W
Broadway Av. bridge (1887)
Plymouth Av. bridge (1874)
Burlington Northern bridge at Nicollet Island (1867)
Hennepin Av. bridge (1855)
Third/Central Av. bridge (1916)
Stone Arch bridge (1883)
I-35W bridge (1967)
10th Av. bridge (1874, demolished 1943)
Minneapolis Western railroad bridge (1890, demolished 1952)
10th/Cedar Av. bridge (1929)
Washington Av. bridge (1883)
Northern Pacific/Bridge 9 (1885)
I-94 (Dartmouth) bridge (1963)
94
Franklin Av. (Cappelen) bridge (1923)
Milwaukee Road (Short Line) bridge (1902)
ST. PAUL
Lake St.
Midtown Greenway
Proposed pedestrian bridge
Mississippi R.
Lake-Marshall bridge (1889)
35W
Ford (Intercity) bridge (1927)

Franklin Ave. 1890
Henn ave steel arch 1891

Source: Star Tribune research

Star Tribune

Miss. River Bridges (StP to Mpls)

1901/1902?

IGH-SPP CRI&P 1895 - 1980
(used also for autos until 1999)

Belt Line (Pig's Eye Lake) SSP-SP
StP Bridge & Term Ry 1910
Rebuilt 1925 and 1951 and Sep 1982 (CGW)

Robert St.
Iron Truss Span 1886
concrete arch 8-1926
(Capt. Louis Robert 1811-1874 fur trader)

CGW Lift Bridge
Swing Span 1885
Lift Bridge 4-1913 Reconst 1925

Raspberry Island/Navy Island, Back Channel (Railroad?)
Original truss span date? washed out
before 1949. Timber Beam built 1949
remodeled 1969. Steel Beam span 11-2001

Wabasha St.
original 1859 Howe truss wood & iron
By 1874 channel span remade of iron
1890 half of the bridge replaced (north)
1900 south half of bridge replaced
1955 remodeled and widened
new bridge const 1996 - 1998 Compl 11-2001
(Iron truss span removed 1996)

Smith Ave. "High Bridge"

1889 deck truss 1st span 1888

struck by tornado 1904

wood deck replaced by concrete 1958

+ extensive renovation

Removed 7-1984 New bridge 7-1987

CStPM&ORR swing span [redacted]

1916 replaced 1877 wood Howe truss swing span

original 1869 bridge was wood swing span

1947 steel girder replaced timber trestle on south side where the counterweight rests

replaced [redacted] 1876-1877 because of decay in original pine chords

Ft Snelling (W. 7th St)

1909 steel deck arch

1880 original wood thru-truss span

Replaced 11-1961 steel girder

Ford Parkway (Ford Bridge)

1927 Concrete Widened 1973

Lake St.

1889 iron deck arch span

1905 widened and reinforced with steel arches down the center for streetcars

Oct 1992 new concrete bridge completed

CMStP&PRR
1902 steel deck truss American Bridge Co
original : ——→

Franklin ave.
Cmpl 12-1923 Concrete
original 1890

Washington ave 1883
1886 iron truss
10-1965 steel girder

NPRR thru U of M Campus
1885 steel Rehabilitated about 1917
Relocated 1922-1924 Repaired 1955
off U of M Campus
RR use ended 1981 Recreational use 1999

10th ave (Cedar ave) 10th / Cedar ave.
9-1929 concrete and girder
Replaced 1872 truss span which remained in place until 1942 as a foot bridge

Stone arch Bridge 23 arches total
STPM&MRR 1883
1963 two arches and 1 pier removed for upper Harbor project, with 198 ft steel truss
RR use ended 1978 Recreational use 1994

3rd ave (St anthony Falls)

6-1918 concrete 1916

major renovation 11-1980

MPLS WESTERN RR
1890 - 1952

[Nowakant old [illegible]:
mpls western Ry —]
~~6th~~ 10th ave SE 1874-1943

East Channel Hennepin ave. (~~Hen~~ Nicollet Island to E. Hennepin ave.)
Twin approaches to and from the Hennepin ave bridge.

1851 crude bridge (Franklin Steele)
1878 stone arch widened 1899 Removed 1973
1972 north span steel 413'
1973 south span steel 383'

Hennepin ave. (Hen ave to ~~Hennepin~~ Nicollet Island)
1) JAN 1855 Suspension bridge (wire suspension). toll bridge until 1872
1876 stone tower suspension bridge 10" dia cables
1888 two span solid wrought iron deck arch 1888-1891
1891 widened steel arch
1990 Suspension bridge 3 towers

1) 620 LF long 17 LF wide roadway
3.75" dia cables Cost $36,000 Toll bridge
wooden Towers (two per end)

Great Northern RR (2AN) East Channel
1893 girder Remodeled 8-1925
1878 [redacted] StP&P Ry bridge 1867

Great Northern RR (2AN) Main Channel
1893 girder Remodeled 1963 also 1926
1878 StP&P Ry bridge

Boom Island (C&NW) Nicollet Island to Boom Island
1890 iron Truss aband 1971
Recreational use 1987

Plymouth Ave.
1882 Truss
1870 wood 1874
1983 Concrete

Broadway Ave. wood (toll bridge)
1857 - later washed out in a flood 6-1859
1887 Truss out of service 1985
7-1987 steel girder

~~span~~
one [redacted] moved
to Nicollet Island
(recreation)

Northern Pacific RR (24AN)
1884 remodeled 1927
Remodeled 1963

Lowry Ave

1887 metal truss

1905 piers and abutment + new bridge same style

7-1958 new trusses

10th ave 1882
Stone arch 1883
NPRR 1884 (~~[illegible]~~) 24AN
(Unmentd)
WPRR 1885
Wash ave 1886
Broadway 1887
Lowry 1887
Hennepin ave 1888

Soo Line Camden
may 1905
7-1977 piers modified & girders added

42AN Camden
1913 truss Removed 1974
7-1977 girder

Date Electric Lines Started
May 20, 1919

I have compared these dates with ours. There are few differences. Our dates based on the operating department bulletins appear to be correct.

Minneapolis Line	ERM	TCRT	
Nicollet Ave.: loop to 38th St.	9-22-1890	7-23-1890	
Hennepin Ave.: Lyndale to 31st St.	8-13-1891	3-13-1891	
Grand Ave.: Lake St. to 40th St.	11-18-1907	11-17-1907	
Grand St. N.E.: Lowry Ave. to 29th Ave.	11-3-1912	11-13-1912	
Cedar Ave.: 35th St. to 42nd St.	6-13-1914	5-14-1914	
St.Paul Line			
E. 7th St. Cable	6-14/16-1889	1-16-1889	(1)
Selby Ave. electrified	8-3-1898	6-3-1898	(2)
Hamline Ave. line relocation	6-29-1906	6-30-1906	
Dale St.: Grand Ave. to Maryland Ave.	10-23-1914	10-31-1914	
St.Paul & Suburban Railway			
St.Paul to Wildwood and Mahtomedi	7-1-1898	7-1-1899	(3)

(1) Research indicates June is the correct month.
(2) 6-3-1898 is when the Selby Ave. Cable ceased operating.
(3) 1899 date refers to the incorporation of the Mpls. & St.Paul Suburban Ry.

DATE ELECTRIC LINES STARTED

Minneapolis Street Railway Company

MINNEAPOLIS, MINN.

May 20th, 1919.

LINE	FROM	TO	DATE	
4th Ave. So.	Loop	38th St.	Dec. 24, 1889	✓
Nicollet Ave.	Loop	38th St.	July 23, 1890	→
Washington Ave. No.	Loop	42nd Ave. No.	Sept. 10, 1890	✓
Riverside Ave.	Loop	Station (27th & 26)	Sept. 21, 1890	✓
Nicollet Ave.	38th St.	50th St.	Oct. 5, 1890	✓
Lyndale Ave So.	Loop	31st St.	Nov. 28, 1890	—
Chicago Ave.	Loop	38th St.	Dec. 7, 1890	—
Kenwood	Hennepin Ave.	21st St.	Dec. 9, 1890	✓
Interurban	7 Corners	St. Paul	Dec. 9, 1890	✓
Bryn Mawr	Hennepin Ave.	Aldrich Ave.	Dec. 10, 1890	✓
Western Ave.	Loop	Penn Ave.	Jan. 25, 1891	✓
Hennepin Ave.	Lyndale Ave.	31st St.	Mar. 13, 1891	→
Lake Harriet	31st St.	Lake Harriet Loop	May 24, 1891	✓
Bloomington Ave.	Loop	32nd St.	May 28, 1891	✓
Oak St. (Old University)	Loop	Washington Ave. S.E.	June 14, 1891	✓
Como	15th Ave. SE. & 4th	15th Ave. SE. & Como	June 14, 1891	✓
Minnehaha Falls	Station (27th & 26)	Minnehaha Falls	June 14, 1891	✓
6th Ave. No.	Loop	Penn Ave.	June 14, 1891	✓
Central Ave.	4th & E. Hennepin	29th Ave. N. E.	June 28, 1891	✓
2nd St. N. E.	East Hennepin	Lowry & Grand N.E.	Aug. 4, 1891	✓
Penn Ave. No.	20th & Wash. N.	Lowry & Penn Ave. N.	Aug. 13, 1891	✓
Bryant Ave. So.	31st & Lyndale	38th & Bryant	Dec. 16, 1891	✓
Cedar Ave.	Riverside Ave.	34th St.	Dec. 17, 1891	✓
Emerson Ave. No.	20th Ave. No.	Lowry Ave. No.	Dec. 17, 1891	✓
Monroe St.	Central Ave.	17th Ave N. E.	Dec. 19, 1891	✓
Plymouth Ave.	Washington Ave.	Penn Ave.	Dec. 31, 1891	✓
Bryn Mawr	Aldrich Ave.	Oliver Ave.	Aug. 4, 1892	✓
Bryant Ave So.	38th St.	46th St.	Aug. 26, 1893	✓
Central Ave.	29th Ave. N. E.	40th Ave. N. E.	Aug. 29, 1893	→
6th Ave. No.	Penn Ave. No.	Russell Ave. No.	Nov. 23, 1893	✓
Como-Harriet Inter.	15th & Como S.E.	St. Paul	July 1, 1898	—✓
8th St. S. E.	Central Ave.	14th Ave. S. E.	Nov. 20, 1899	→
Camden	42nd Ave. No.	Workhouse	Dec. 1, 1899	→
Chicago Ave.	38th St.	46th St.	Oct. 3, 1904	✓
Lake St.	Hennepin Ave.	31st Ave. So.	May 27, 1905	✓
Bloomington Ave.	32nd St.	34th St..	Aug. 7, 1905	✓
Fort Snelling	Minnehaha Falls	Fort Snelling	Aug. 21, 1905	✓
Lake Minnetonka	Lake Harriet Loop	Lake Minnetonka	Sept. 30, 1905	✓
Selby-Lake Inter.	31st Ave. So.	St. Paul	May 21, 1906	✓
Robbinsdale	Penn Ave. No.	Robbinsdale	Nov. 5, 1906	✓
St. Louis Park	Hennepin Ave.	St. Louis Park	Nov. 12, 1906	✓✓
Columbia Heights	Central & 40th	5th St. & 40th	Nov. 14, 1906	→✓
Fremont Ave. No.	Lowry & Emerson	36th & Fremont	May 19, 1907	✓
Oak St.	Washington Ave. SE	Dartmouth & Superior	Sept. 13, 1907	✓
Grand Ave.	Lake St.	40th St.	Nov. 17, 1907	→

DATE ELECTRIC LINES STARTED

Minneapolis Street Railway Company

MINNEAPOLIS, MINN.

May,20th, 1919.

LINE	FROM	TO	DATE	
Nicollet Ave.	50th St.	54th St.	Mar. 1, 1911	✓
Johnson St.	18th & Central	28th & Johnson	Nov. 8, 1911	✓
Bryant Ave.	46th St.	50th St.	Nov. 22, 1911	✓
Penn Ave. No.	Lowry Ave. No.	38th Ave. No.	Nov. 24, 1911	✓
Bloomington Ave.	34th St.	38th St.	Dec. 10, 1911	✓
Fremont Ave. No.	36th Ave. No.	42nd Ave. no.	June 27, 1912	✓
Johnson St. N. E.	8th St. & 10th Ave	18th Ave. N. E.	July 31, 1912	✓
Johnson St. N. E.	28th Ave. N. E.	29th Ave. N. E.	July 31, 1912	✓
Plymouth Ave.	Penn Ave.	Sheridan Ave.	Sept. 8th 1912	✓
Lake Nokomis	34th & Cedar Ave.	38th St.& 28th Ave.	Nov. 12, 1912	✓
2nd St. N. E.	Lowry & Grand	29th & Grand	Nov. 13, 1912	→
East 25th St.	Cedar Ave.	36th Ave. So.	Nov. 28th1912	✓
Lake Nokomis	38th St.	42nd St.	Dec. 3, 1912	✓
Camden	Workhouse	51st Ave. No.	Aug. 22, 1913	✓
1st St. No.	Hennepin Ave.	1st Ave. No.	Sept.15, 1913	→
Lake Nokomis	42nd St.	50th St.	Sept.27, 1913	✓
Xerxes Ave.	Tonka R. of W.	50th St.	Oct. 1, 1913	✓
2nd St. N. E.	29th Ave. N.E.	30th Ave. N.E.	Oct. 4, 1913	✓
Cedar Ave. Stub	35th St.	42nd St..	May 14, 1914	→
Broadway & 20th Ave.	Wash. & 20th Ave.	13th & Wash. St.NE	June 27, 1914	✓
Broadway & 20th Ave.	Monroe & Broadway	Jackson & Broadway	June 27, 1914	✓
Fremont Ave. No.	42nd Ave No.	44th Ave. No.	June 28, 1914	✓
Lake Nokomis	28th Ave.S.& 50th	34th Ave.S.&50th.	Oct. 25, 1914	✓
Oak St.	Dartmouth & Superior	Hamline & 27th Ave,	Oct. 28, 1914	✓
West 50th St.	Xerxes Ave. So.	Penn Ave. So.	Oct. 31st1914	✓
11th St. So.	Hennepin Ave.	4th Ave . So.	Oct. 31, 1914	✓
Franklin Ave.	4th Ave So.	27th Ave So.	Oct. 31, 1914	✓
Intem. Campus	15th Ave.& 4th St.	University Campus	Nov. 4th 1914	✓
Glenwood Park	Penn Ave.	Glenwood Park	June 24, 1916	✓
Franklin Ave.	27th Ave. So.	River Boulevard	Dec. 17, 1916	✓

LEE:C:::

DATE ELECTRIC LINES STARTED

The Saint Paul City Railway Company

SAINT PAUL, MINN.

May 20th, 1919.

LINE	FROM	TO	DATE
Selby Cable Line	Loop	Chatsworth St.	Jan. 21, 1888 ✓
E. 7th St. Cable	Loop	Duluth Ave.	Jan. 16, 1889 →
Rice. St.	Loop	Maryland St.	Jan. 1, 1890 ✓
Grand Ave.	Loop	Cretin Ave.	Feb. 22, 1890 ✓
Mississippi St.	Loop	Brainerd & Edgerton	May 18, 1890 ✓
W. 7th St.	Ramsey St.	Tuscarora St.	Oct. 24, 1890 ✓
University Ave.	Rice St.	Dale St.	Nov. 2, 1890 ✓
Interurban	Dale St.	Minneapolis	Dec. 9, 1890 ✓
Cherokee Heights	Loop	Smith & Annapolis	Dec. 31, 1890 ✓
Hamline	Lexington & Univ	Snelling & Como Ave.	Jan 13t, 1891 ✓
Concord St.	Loop	Witham St.	Jan. 14, 1891 ✓
Lafayette Ave.	Loop	Payne & Maryland	Feb. 13, 1891 ✓
W. 7th St.	Tuscarora St.	Fort Snelling Bridge	Feb. 28, 1891 ✓
Rondo St.	Loop	Dale St.	Feb. 28, 1891 ✓
Maria Ave.	E. 7th St.	Earl & Hastings	Feb. 28, 1891 ✓
Como Ave.	Rice St.	Front & Dale St.	Feb. 26, 1891 ✓
Rice St.	Maryland St..	South Street	Feb. 28, 1891 ✓
South Robert(State)	Concord St.	Annapolis St.	Feb. 28, 1891 ✓
Hamline(Now Como)	Snelling & Como	Langford & Como	July 31, 1891 ✓
Merriam Park	Chatsworth St	Fairview Ave.	Sept, 25, 1891 ✓
Randolph St.	West 7th St.	River Blvd.	Oct. 1, 1891 ✓
(N.B. Randolph St. Line re-moved in year 1900)			
Merriam Park	Fairview & Selby	St. Anthony & Prior	Oct. 28, 1891 ✓
Jackson St.	Loop	Courtland & Maryland	May, 12, 1892 ✓
Como Park	Front & Dale St.	Como Park	Sept. 7, 1892 ✓
Rondo St.	Dale St.	Miller(approx.Avon)	Aug. 14, 1893 ✓
East 7th St.(Elec)	Loop	Duluth Ave.	Sept. 1, 1893 ✓
Merriam Park	St. Anthony	University	Sept.30, 1893 ✓
Maria Ave.	Hastings & Earl	Indian Mound.	May, 24, 1894 ✓
Stryker Ave.	Winnifred St.	Annapolis St.	July, 1, 1894 ✓
Selby Ave.(Elec.)	Loop	Chatsworth St.	June 3, 1898 ×
Como-Harriet(Inter)	Como Park	Snelling Ave.	July, 1, 1898 ✓
Como-Harriet (Inter)	Langford & Como	Minneapolis	July, 1, 1898 ✓
Union Depot loop	Wabasha & 3rd.	Sibly & 5th St.	Nov. 1, 1898 ✓
Lake Phalen Line	Green Briar & Maryland	Lake Phalen	July 5, 1905 ✓
South St. Paul	Witham & Concord	So. St. Paul	July 22, 1905 ✓
Inver Grove	So St. Paul	Inver Grove	Aug. 1, 1905 ✓
Snelling Ave.	Minnehaha St.	Grand Ave.	Sept, 2, 1905 ✓
Rondo St.	Miller(appx.Avon)	Chatsworth St.	Nov. 23, 1905 ✓
Selby Lake Inter.	Prior Ave.	Minneapolis	May, 21, 1906 ✓
Hamline	Thomas & Como	Hamline & Minnehaha	June 30, 1906 } →
Hamline	Snelling & Haha	Prior & University	June 30, 1906
Randolph St.	West 7th	Pascal Ave.	July 14, 1906 ✓

DATE ELECTRIC LINES STARTED

The Saint Paul City Railway Company

SAINT PAUL, MINN.

May 20th, 1919.

LINE	FROM	TO	DATE
Hope St.	East 7th St.	Cypress & E.4th St.	June 21, 1909 ✓
Randolph St.	Pascal Ave.	Snelling Ave.	June 21, 1909 ✓
Snelling Ave.	Randolph St.	Grand Ave.	June 21, 1909 ✓
Rondo St.	Chatsworth St.	Griggs St.	Sept. 8, 1912 ✓
Arcade-Forest	E.7th & Arcade St.	Forest & Maryland St.	Nov. 10, 1913 ✓
Burns Ave.	Earl St	Clarence Ave.	July 1, 1914 ✓
Dale St.	Grand Ave.	Maryland St.	Oct. 31, 1914 →
Western Ave.	Como Ave.	Cook St.	Nov. 4, 1914 ✓
Inter-Campus	Como Ave.& Eustis	University Farm School	Nov. 4, 1914 ✓
St. Clair St.	West 7th St.	Oxford St.	June 1, 1915 ✓
Hope St.	Cypress & E.4th St.	Atlantic & E.4th St.	Nov. 15, 1915 ✓
St. Clair St.	Oxford St.	Snelling Ave.	Sept. 1, 1917 →
Maryland St.	Forest St.	Duluth Ave.	Oct. 5, 1917 ✓
St. Clair St.	Snelling Ave.	Fairview Ave.	Oct. 22, 1917 ✓

LBB:S:::

DATE ELECTRIC LINES STARTED

THE MINNEAPOLIS & ST. PAUL SUBURBAN RAILROAD COMPANY

May, 20th, 1919.

INTERURBAN

LINE	FROM	TO	DATE
Interurban	7 Corners, Mpls.	Dale St., St. Paul	Dec. 9, 1890 ✓
Como-Harriet	15th & Como, Mpls.	Langford & Como, St.P.	July 1, 1898 ✓
Selby Lake	31st Ave., Mpls.	Prior Ave., St.P.	May 31, 1906 ✓
Snelling-Minnehaha	Ft.Snell.Lp.Mpls	Ft.Snell.Lp.St.P.	June 31, 1909 ✓

SUBURBAN

LINE	FROM	TO	DATE
Stillwater	St. Paul	Wildwood	July 1, 1899
Stillwater	Wildwood	Stillwater	~~July 1, 1899~~ aug 23 1899
Mahtomedi	Wildwood	Mahtomedi	July 1, 1899
Wilkin St.	Laurel & 8th St.	Wilkin & William	Nov. 6, 1899 ✓
Owen St.	Substa. on OwenSt.	3rd & Churchill	Nov. 6, 1899 ✓
3rd St.	3rd & Chestnut	4th & Orleans(C.L.)	Nov. 6, 1899 ✓
White Bear	Wildwood	White Bear	Nov. 27, 1904 ✓
South Stillwater	Stillwater C.L.	South Stillwater	May 5, 1905 ✓
Lake Minnetonka	Lake Harriet Lp.	Excelsior	Sept.30, 1905 ✓
Deephaven	Deep.Jc., Tonka Line	Deephaven	June 10, 1906 ✓
Hopkins Spur	Tonka Line,	9th & Xlcr.Av.Hpks.	June 17, 1906 →
Robbinsdale	Minneapolis	Robbinsdale	Nov. 5, 1906 →
St. Louis Park	Minneapolis	St. Louis Park	Nov. 13, 1906 →
Tonka Bay	Excelsior	Tonka Bay	May 9, 1908 →
Ft. Snelling Spur	Main Line	Reservation Barrack	June 21, 1909 ✓
Speedway Spur	Ft. Snelling Main Line	Speedway	Sept. 4, 1915 ✓

(N. B. Speedway Spur Removed in year 1917)

WB, Still, Exc T Bay Deephaven Discontinued Aug 10 1932

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